VOL. 180 No. 6 AMERICAN JUNE, 1954

JUL 19 1954

Gas Journal

THE ONLY THING THIS BIG CAPACITY METER LACKS IS WEIGHT!

ROCKWELL "415" *Aluminum* METER

The Rockwell "415" is the improved successor to the Rockwell No. 2 cast iron meter. It's smaller, much lighter, easier to handle and repair. The pressure cast aluminum alloy case has high impact resistance, while the single joint body construction greatly reduces the opportunity for leaks.

Like all Rockwell aluminum meters the "415" has such quality features as steel spud inserts, a gasketed index box, oil impregnated bronze bearings and synthetic diaphragms. *Write for full details.*

CAPACITY—Full 415 cfh., (at ½" diff. with 0.60 sp. gr. gas)

WEIGHT—only 19½ lb. (⅓ the weight of cast iron)

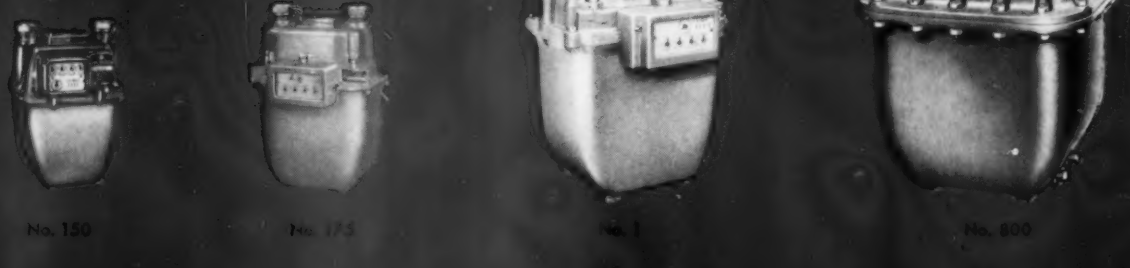
ROCKWELL MANUFACTURING COMPANY

PITTSBURGH 8, PA. Atlanta Boston Chicago Dallas Houston Kansas City, Mo. Los Angeles New York Philadelphia Pittsburgh San Francisco Seattle Tulsa

In Canada: Peacock Brothers Limited

YOU CAN RELY ROCKWELL ON ROCKWELL

OTHER ROCKWELL ALUMINUM METERS FOR HOME AND COMMERCIAL SERVICES



No. 150 No. 175 No. 1 No. 800

MUELLER®

INVERTED KEY GAS CURB STOP

Permanently

GAS-TIGHT...
EASY TURNING...
WITHOUT SERVICE

1. Large, bronze cap — down-pressure on cap unseats key for easy turning . . . skirt shears ice or other foreign material.

2. Shear-resistant silicon bronze pin — securely anchors cap to key.

3. "O" ring seal — provides positive seal at top of key.

4. Heavy bronze key — inverted type . . . accurately machined . . . ground and lapped to gas-tight fit.

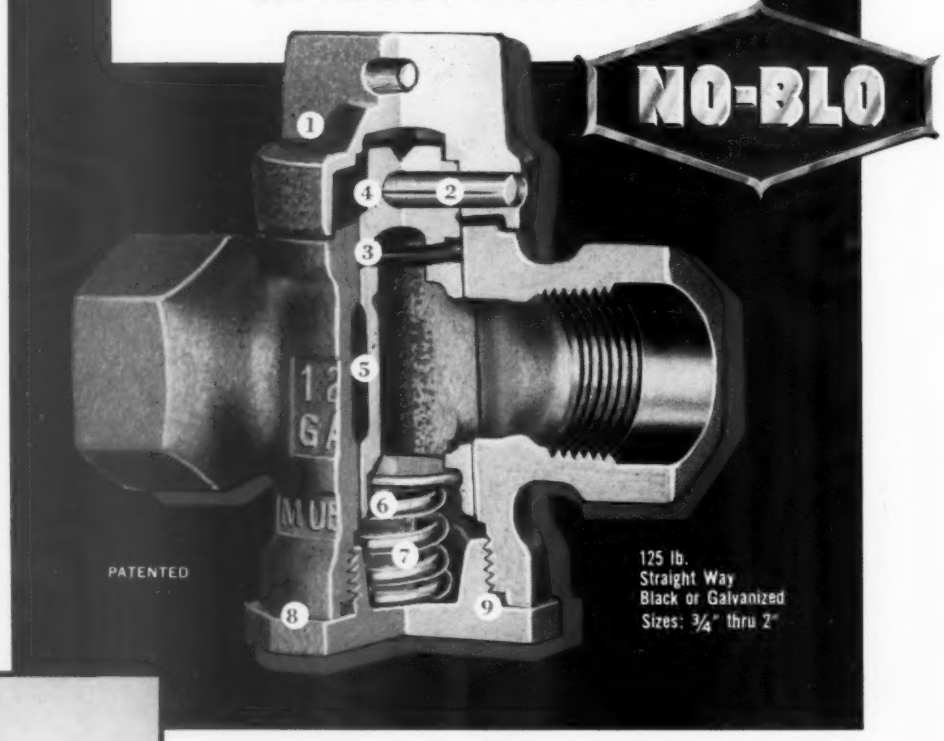
5. False ports in both body and key — protect ground key surfaces when stop is closed.

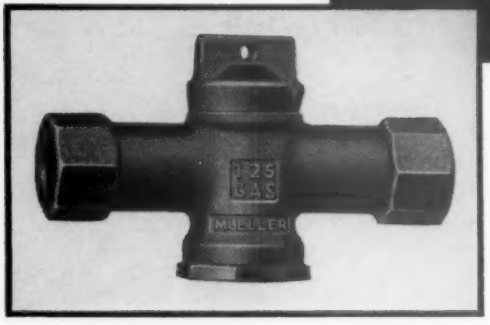
6. Stainless steel spring — allows key to be unseated for easy turning . . . reseats key.

7. Cork — absorbs any condensed moisture in stop . . . lasts indefinitely.

8. Heavy cast iron body and bottom plug — close-grained grey iron gives maximum strength and corrosion resistance.

9. Neoprene impregnated cork gasket — provides positive seal at bottom of stop . . . prevents leakage along line.





Inverted key curb stop with long Dresser Coupling Ends, Style 90. (Especially designed for installing in a line without a curb stop or to replace existing curb stops.)

Gas curb stop keys must fit the body intimately to be gas-tight at present service pressures. Normally this would mean a stop that is difficult to operate or a lubricated stop requiring periodic servicing. However, Mueller Co. has developed the inverted key curb stop, with the features shown, that is gas-tight at 125 psig — *yet turns easily without lubrication or periodic servicing!*

MUELLER CO.

Dependable Since 1857

MAIN OFFICE & FACTORY DECATUR, ILLINOIS

JUL 19 1954

A diaphragm you can trust!

Meters equipped with VULCAN Synthetic Diaphragms are not only *more accurate* but definitely *cost less to maintain.* This fact is attested by the performance records of hundreds of thousands of Vulcan-equipped meters. For the facts behind this acceptance, write for your copy of our free brochure, "The Heart of a Gas Meter".

Vulcan

SYNTHETIC DIAPHRAGMS

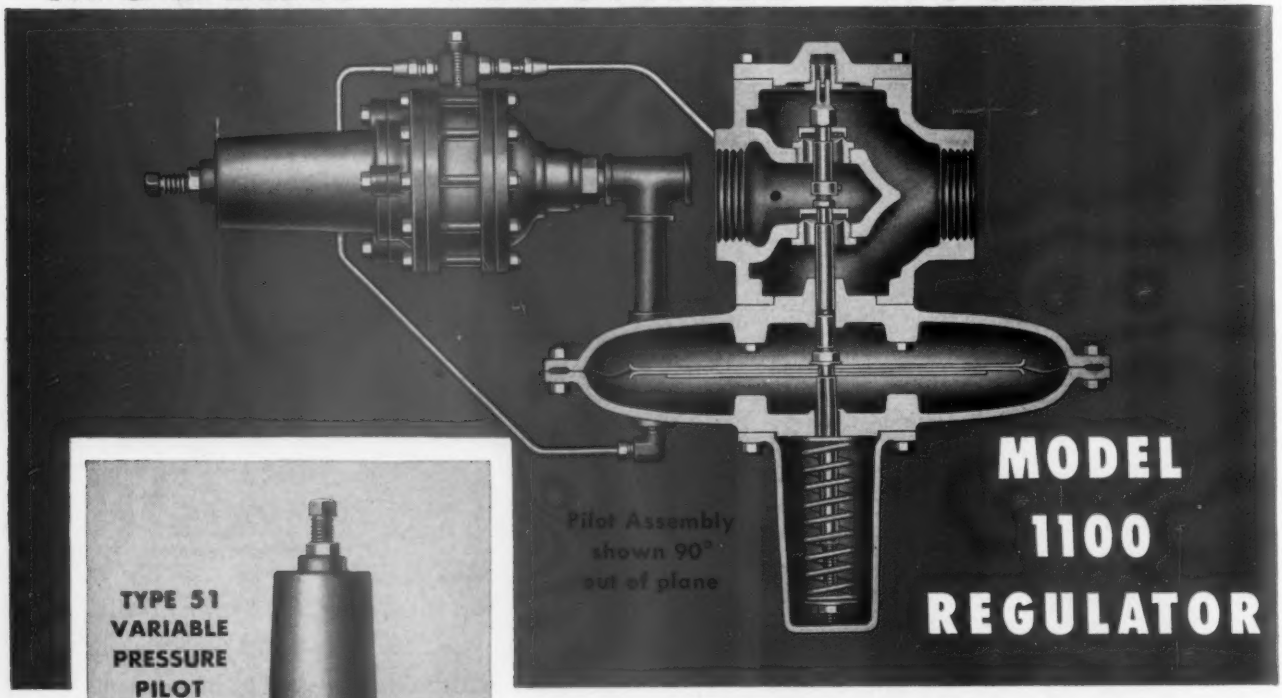
ALSO AVAILABLE:
Molded diaphragms for Emco and Metric meters.

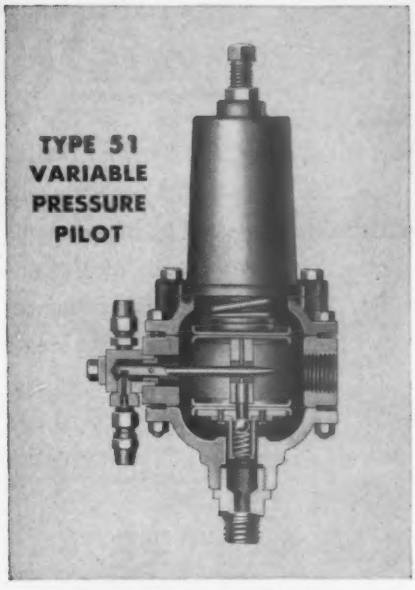
VULCAN RUBBER PRODUCTS, INC.
54 Worth Street, New York 13, N. Y.
Manufacturer of Vulcan-Duroflex products • A subsidiary of Reeves Brothers, Inc.

AMERICAN GAS JOURNAL, June, 1954. Vol. 180, No. 6. Published monthly (except October, then semi-monthly), by American Gas Journal Inc., at 73 Main Street, Brattleboro, Vt. Entered as second class matter January 24, 1950, at the post office at Brattleboro, Vt. under Act of March 3, 1879. Executive and editorial offices at 205 East 42nd St., New York 17, New York. Subscription prices, U.S. $3 per year; Canada $4; Foreign $10. Single copies 50 cents, except October 1 issue, which is not sold separately. Printed in U.S.A.

Chaplin-Fulton

MODERN—VERSATILE—ACCURATE





• the heart of the MODEL 1100 assembly, insuring precisely accurate control over the complete flow range. • Unitized construction—valve lever and orifice as a unit are removed from the outside, without disturbing balance of assembly. The likely trouble spot—the orifice—is placed outside where you can get at it quickly—no internal tubes to clog. • Twin diaphragms remove as a unit. • Internal relief unit—guards against overpressure. • Spring unit—remove three screws to change springs. • Built for service. • Used for accuracy.

You can't buy, beg, borrow or steal a more versatile pressure regulator than MODEL 1100. Nor has traditional Chaplin-Fulton ruggedness, simplicity or accuracy been forgotten in this new modern design. Size—2" only.

Wider Application —Inlet Max.—250 psi. Outlet Range—1" to 75 psi or 50 to 150 psi.

Greater Capacity —24,000 CFH at 10 psi to ounces; 114,000 at 100 psi. Body contoured for flow.

Easier Maintenance—regulator or pilot can be serviced without disturbing the other. Quickly accessible orifices in both, easily renewable.

Simpler Installation—only one connection required. No complicated pins or toggles to adjust.

You can standardize on MODEL 1100 for a wider range of your industrial, commercial or distribution installations.

ACCURATE CF MFG CO DEPENDABLE

Chaplin-Fulton
MANUFACTURING COMPANY
Pittsburgh 25, Pennsylvania

AMERICAN Gas Journal
ESTABLISHED 1859

VOLUME 180 JUNE 1954 NUMBER 6

This month...

The responsibilities of the natural gas segment of the industry have been considered and brought out into the open for thought-processing by producer, pipeliner and distributor. Gordon C. Griswold of Brooklyn Union Gas Company offers words of wisdom about the future of the industry, starting on page 14, and interested parties will spend their time well learning about his observations.

• • •

The lack of gas industry coordination was deplored emphatically before the Southern Gas Association by H. K. Griffin of Mississippi Valley Gas Company. He likened it to the situation of the cotton industry before it embarked upon an integrated program which resulted in exceeding the industry's own objectives in face of new technological competition. Mr. Griffin minces no words in suggesting remedies for greater consumer-acceptance of gas fuel and equipment, on page 18.

• • •

A somewhat startling and possibly disheartening picture in the preliminary findings of the 10-cities Action Demonstration Program has been presented by Christy Payne, Jr. It is reported on page 19.

• • •

The importance of gas and gas equipment in the world's largest diner demonstrates a vast sales potential—see page 42.

• • •

A pet promotional program of AMERICAN GAS JOURNAL, the Mrs. America contest, ended with a wave of consumer publicity that demonstrates the potential under industry-wide, full-powered action. The results are summarized on page 46.

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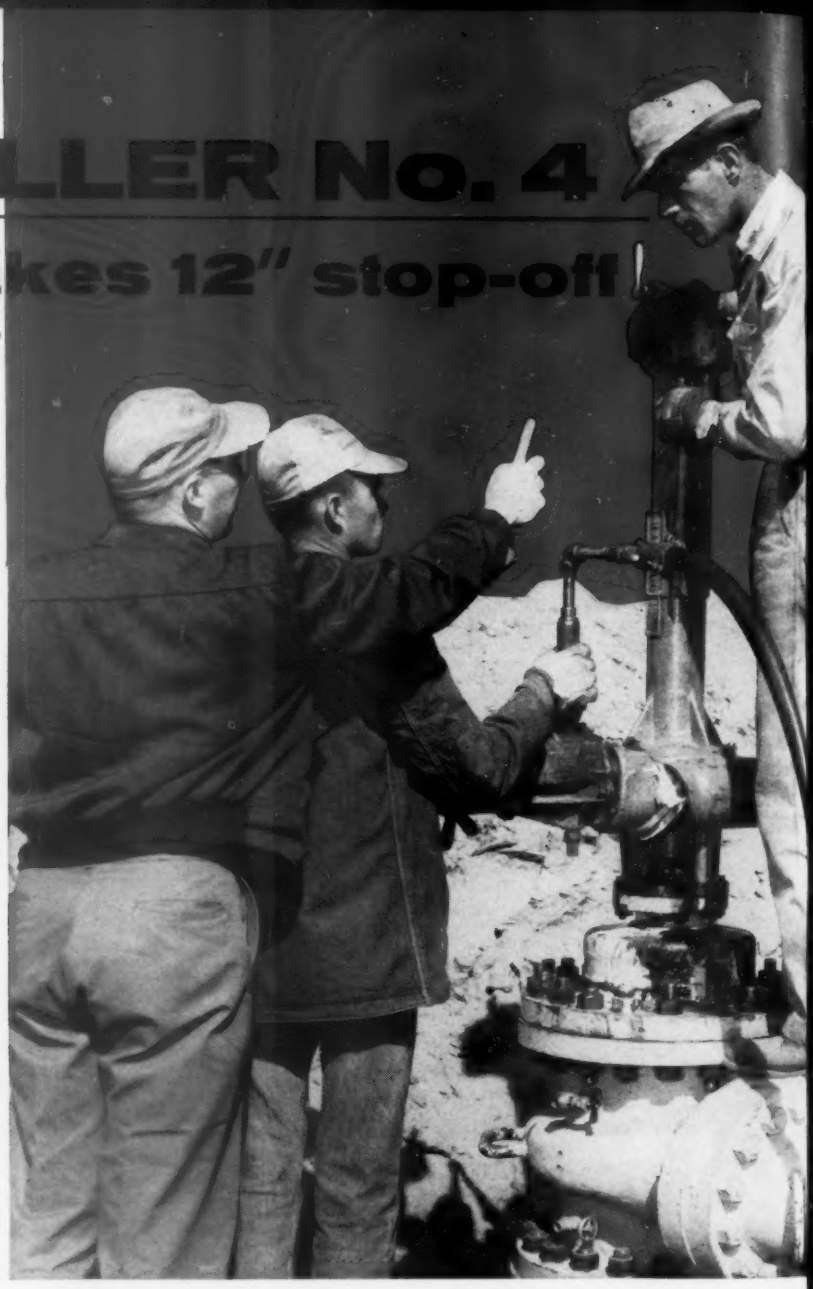
October 1 Handbook issue not sold separately.

New MUELLER No. 4 [illegible]

Makes 12" stop-off



Mueller "C-1" Drilling Machine with air motor drilling through 12" line, under pressure.

"C-1" Drilling Machine, with adaptor, removed from steel gate valve, showing section of pipe retained inside of shell cutter.

Mueller H-17440 Line Stopping Machine with steel wedge stopper being brought into position for lowering onto special 14" gate valve.

Expanding steel wedge stopper in H-17257 Line Stopper Fitting, making a complete stop-off.

Inserting pressure equalizing "O" ring completion plug into Line Stopper Fitting, using H-17445 balanced pressure Completion Machine.

Line Stopper Unit

for Phillips Pipe Line Co.

Phillips Pipe Line Co. removed long sections of their 12″ crude oil line which runs from the Permian Basin in West Texas to their refinery at Borger, Texas.
These sections were replaced with 14″ pipe to alleviate the pressure drop between pumping stations.

To keep costs and shutdown time to a minimum, the company made stop-offs, under pressure, holding the oil in the line while the 14″ connections were made.
Though the pumping stations were shut down, hill pressure varied from 25 to 100 psi.

Stop-offs were made simultaneously above and below the point of tie-in, completely isolating a short section of the 12″ line which was removed. The long section of 14″ line was then connected and line-stopping equipment removed. The line was in operation within twenty-four hours from time of shutdown.

MUELLER NO-BLO **Method**

Write for complete details on the No. 4 Line Stopper Unit.

Completion Plug has been inserted into the Line Stopper Fitting and Completion Cap installed.

MUELLER CO.

Dependable Since 1857

MAIN OFFICE & FACTORY DECATUR, ILLINOIS

The test of a century

Ewing Galloway

This is downtown Philadelphia showing the City Hall with the 37-feet-high statue of William Penn atop the tower.

Bettmann Archive

This is Third Street, Philadelphia, as it looked in 1852.

MODERNIZED cast iron

is the test that tells!

PHILADELPHIA Gas Works (Div. of U. G. I. Co.) bought cast iron pipe 119 years ago ...and buys it today.

One hundred years ago, the Philadelphia Gas Works (Div. of U. G. I. Co.) distributed gas to about 6,000 customers through an estimated 125 miles of cast iron pipe. Population of Philadelphia was then around 400,000. Today, the Company serves approximately 570,000 gas customers in this history-rich city of more than two million population. The distribution system contains about 25,000 miles of pipe, more than 90% of which is cast iron pipe.

The word "test" means —"*put to the proof*"— according to the dictionary. Well, 60 utilities have put cast iron pipe to the *proof* for a century — a test to end all tests. They installed cast iron water or gas mains 100 years, or more, ago that are still in service. Yes, the test of a century has *proved* beyond question the long life and low cost per service year of cast iron pipe.

Today's *modernized* cast iron pipe—centrifugally cast and with standardized mechanical joints—is even more economical and efficient. The pipe is stronger, tougher, more uniform in quality. The mechanical joints are bottle-tight for usual gas pressures and for all types of gas.

Cast Iron Pipe Research Association, Thos. F. Wolfe, Managing Director, 122 So. Michigan Avenue, Chicago 3, Ill.

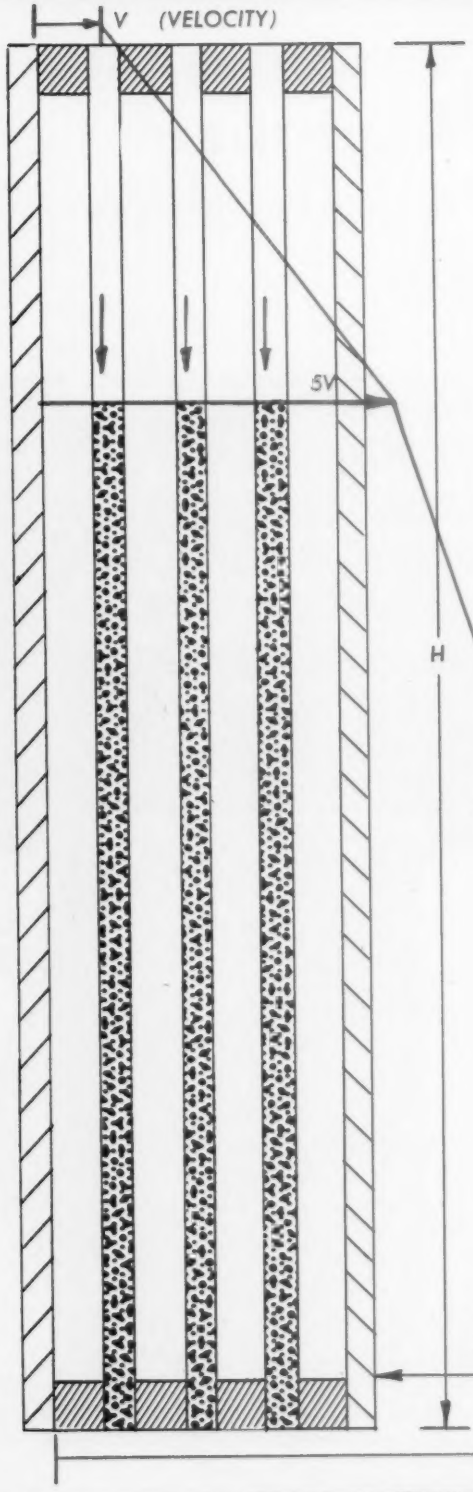
This cast iron gas main is in its 120th year of service in the distribution system of Philadelphia.

CAST Q IRON

The Q-Check stenciled on pipe is the Registered Service Mark of the Cast Iron Pipe Research Association.

pipe FOR MODERN GAS DISTRIBUTION

CONCENTRIC CATALYTIC GENERATOR



AS STANDBY FOR NATURAL GAS

Reformed propane or oil gas enriched to 1,000 Btu/cf has gravity 0.74 and represents higher percentage of substitution to natural gas (gravity 0.6) than propane-air (gravity 1.2) . . . lower fuel costs when heating with heavy oil.

FEATURES

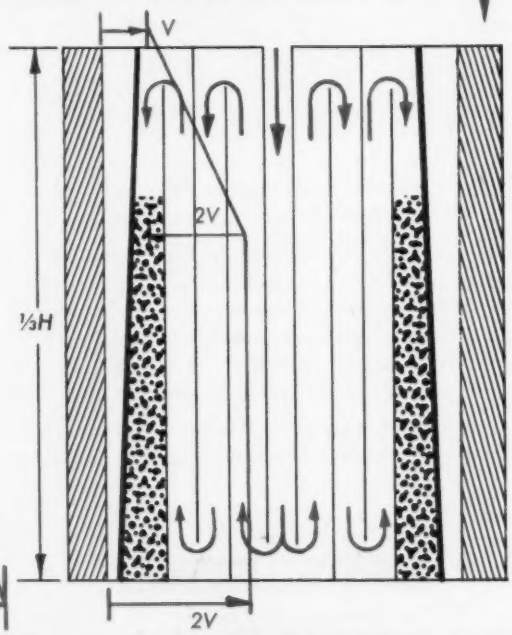
LOW INVESTMENT
- SIMPLE CONSTRUCTION
- REDUCED HEIGHT (H APPR. ⅓)
- NO EXPANSION JOINTS

GOOD REFORMING
- LOW SPEED (V) ALLOWS
- INCREASED CONTACT TIME
- SLOW PREHEATING AT HIGH TEMP.
- PRE-DECOMPOSITION

HIGH EFFICIENCY
- LOW FLUE GAS TEMPERATURE
- LOW RADIATION LOSSES
- SHORT HEATING TIME FOR START

LOW MAINTENANCE
- NO REPLACEMENT OF LONG TUBES EXPOSED TO STRESSES & CORROSION
- EASY CATALYST REPLACEMENT
- EASY TO DISMANTLE

ECONOMIC HEATING
- ADAPTABLE TO VARIOUS FUELS GAS—OIL—TAR—ETC.



NORTH AMERICAN UTILITY & CONSTRUCTION CORP.

CHRYSLER BUILDING NEW YORK 17, N. Y.

NEW safety accuracy economy

RELIANCE SERIES 1400 REGULATORS

Large area passages from the orifice to the vent outlet for emergency gas escape in case of excess pressure.

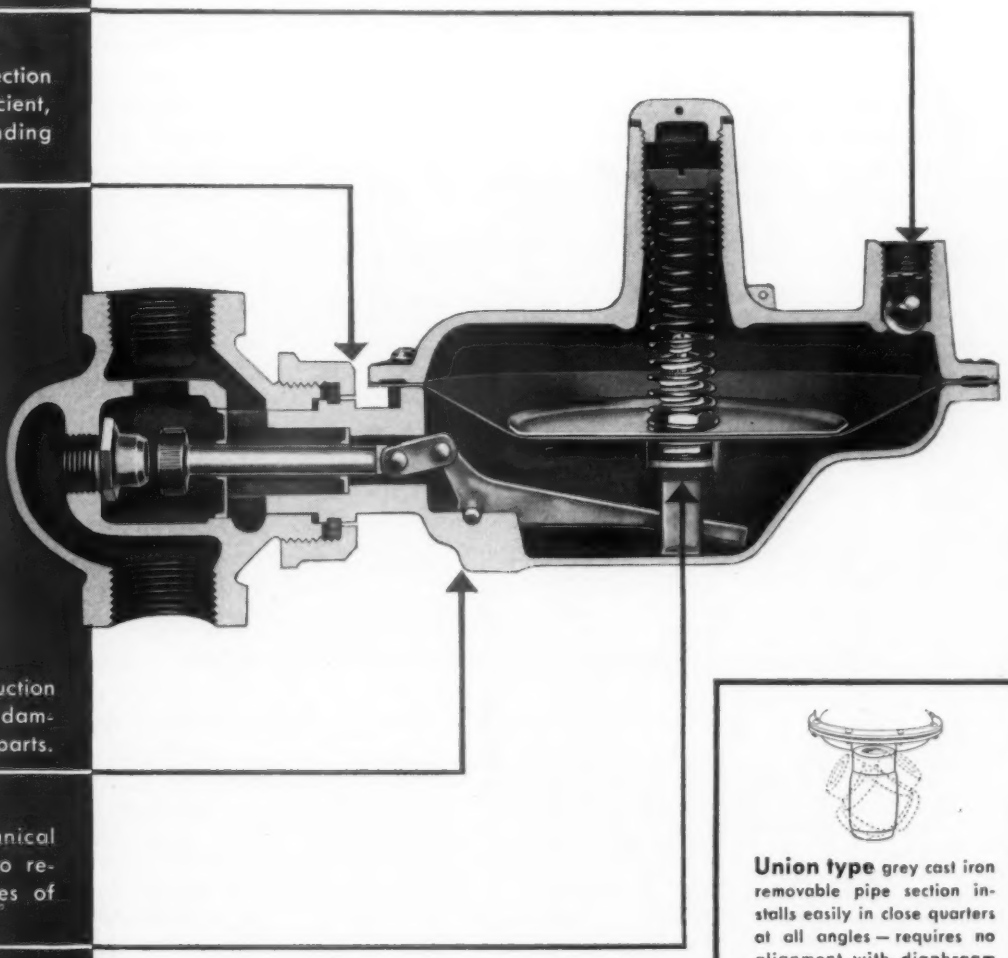
Sturdy neck section helps assure efficient, smooth, compounding action.

For inlet pressures to 100 lbs. per square inch.

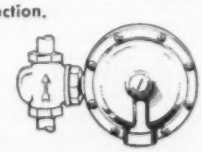
Die-cast aluminum body and top.

Rugged construction — no installation damage to exposed parts.

Built-in mechanical relief valve set to relieve at 14 inches of water.



Union type grey cast iron removable pipe section installs easily in close quarters at all angles — requires no alignment with diaphragm section.



Alternate large area screened, vertical diaphragm —vertical vent top construction positively prevents collection of water or foreign material on the diaphragm.

You will find Reliance Series 1400 Service Regulators are specially adaptable to conversion of low pressure systems to high pressures... engineered for precise pressure control over a wide range of flows and supply pressures. Write for full specifications.

AMERICAN METER COMPANY

GENERAL SALES OFFICE: 1513 Race Street, Philadelphia • Albany
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New York • Omaha • Pittsburgh • San Francisco • Seattle • Tulsa
IN CANADA: Canadian Meter Company, Limited, Hamilton • Edmonton • Calgary

a PROGRESS REVIEW of the Sangamo GAS TELEMETER

The Sangamo Gas Telemeter, which was announced about a year ago, is no longer in the model and experimental stage. It is now being tested by more than 60 major gas utilities and approximately 1,000 Telemeters are operating in such test installations. These tests are confirming the practicability of the mechanical design and the ruggedness of construction of Sangamo Gas Telemeters, and installations where temperatures reached 20° below zero have operated with complete satisfaction. There is evidence that the use of the Gas Telemeter is economically feasible, not only to prevent the high cost of skip readings but also to gain the advantages of outdoor metering. The advantages of outdoor metering have been proved economically sound by the experience of the electric utilities where over 75% of the electric meters are now installed outdoors.

Two major gas meter manufacturers are equipped and have expressed a willingness to install transmitter units in new tinned steelcase meters.

Tooling for production is complete and the Gas Telemeter is regularly being produced in quantity.

Facts as to the extent of the economies derived from outdoor readings can only be established by saturation installations within limited test areas. Comparison with reading costs of an area where all gas meter readings are made outdoors as against similar areas where readings are taken from conventional installations will definitely demonstrate the economies of this device for your company.

The Sangamo Electric Company has for 50 years been a major supplier of measuring devices to the electric utilities and has a national sales organization cognizant of public utility problems. Sangamo, with a record of service to, and a fine reputation with the electric utility industry, merits the confidence of the gas utility industry.

SANGAMO ELECTRIC COMPANY, SPRINGFIELD, ILLINOIS

Consult any of the main sales offices listed below. They will be glad to discuss the merits of the Sangamo Gas Telemeter with you.

NEW ENGLAND DISTRICT
205 A St., Boston 10

NEW YORK CITY DISTRICT
60 East 42nd St., New York 17

UPPER NEW YORK DISTRICT
26 Broadway, Rochester, N. Y.

MIDDLE ATLANTIC DISTRICT
1007 Arch St., Philadelphia 7
Moore St. & Altamont Ave., Richmond 21
601 S. Jefferson St., Roanoke
517 Southern Bldg., Washington 5

SOUTHEASTERN DISTRICT
218 Brower St., Decatur, Ga.
1015 W. Central, Orlando, Fla.
903 W. Adams, Jacksonville, Fla.

EAST CENTRAL DISTRICT
763 Starks Bldg., Louisville 2

MID-SOUTH DISTRICT
332 Hempstead Place, Charlotte 7

CENTRAL SOUTH DISTRICT
5705 Canal Blvd., New Orleans 24

APPALACHIAN DISTRICT
1105 Chester Bldg., Cleveland 14

GREAT LAKES DISTRICT
100 Michigan Ave., E., Jackson, Mich.

NORTH CENTRAL DISTRICT
4701 West 40th Lane, Minneapolis 16

WEST CENTRAL DISTRICT
5606 Belinder Ave., Kansas City 3, Kansas
317 North Eleventh St., St. Louis

MIDDLE WEST DISTRICT
531 31st Street, S.E., Cedar Rapids

CHICAGO DISTRICT
135 South LaSalle St., Chicago 3

SOUTHWESTERN DISTRICT
2424 Colonial Pkwy., Ft. Worth 9
6204 Azalea Lane, Dallas 5

PLAINS DISTRICT
1104 N. 49th Ave., Omaha 3

SOUTH PACIFIC COAST DIST.
1206 S. Maple Ave., Los Angeles 15

CENTRAL PACIFIC COAST DIST.
1061 Howard St., San Francisco 3

NORTH PACIFIC COAST DIST.
220 Ninth Ave., North, Seattle 9

FOREIGN DIVISION
1420 Lincoln Bldg., New York 17

SANGAMO

GM54-1A

is something
ALWAYS
missing?
(to cut your profit)

...then switch to the one line that meets every selling need

* **EXAMPLE No. 4:** You gain three advantages—*profitwise*—when you sell the Bryant line. First, because it's a *quality* line, Bryant discount structures are arranged to give you the highest and broadest profit margins. Second—and again because it's a quality line—Bryant protects your earnings against profit-shrinking "call backs". Last, because it's the most complete line of heating, air conditioning and water heating equipment in the industry, Bryant gives you *more* opportunities to make sales—*and profit!*

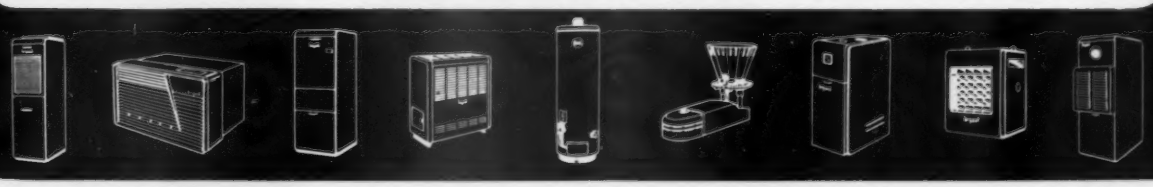
Your nearby Bryant Distributor has complete details. It will pay you to call him today.

bryant®

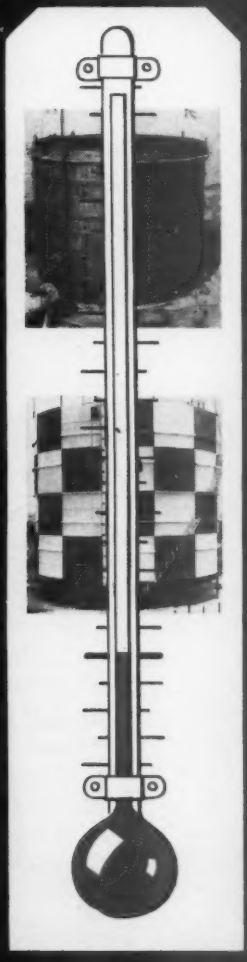
HEATING AIR CONDITIONING WATER HEATING

1. The most complete line in the industry
2. Quality products—Competitively priced
3. Established name—Good customer acceptance
* 4. Broad, attractive profit margins
5. Local Distributor warehousing and service
6. Factory district representatives and traveling sales training and service teams

Bryant Heater Div., Affiliated Gas Equipment, Inc., 17825 St. Clair Ave., Cleveland 10, Ohio



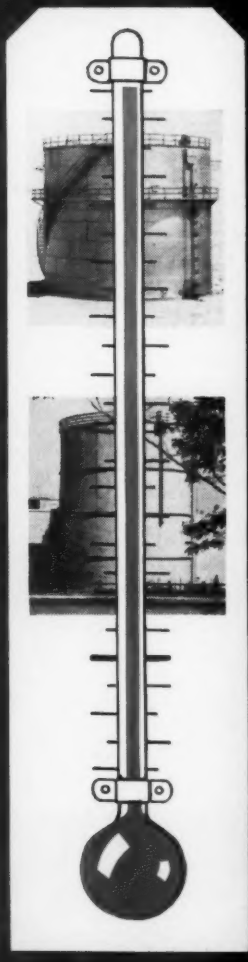
from the **ARCTIC** to the **TROPICS**



more than

130

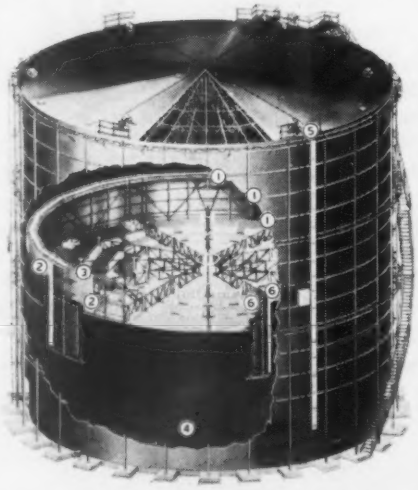
WIGGINS GASHOLDERS have eliminated operating costs for users of chemical process and industrial gases



This 100% dry seal gasholder (no water, no tar, no grease) has proved itself under every condition of climate and temperature. Because of the seal and the simple operating mechanism, operating costs have been entirely eliminated. Comparison of maintenance expense by owners of Wiggins gasholders also shows remarkable savings. Companies who have converted old-type gasholders to the Wiggins advantages have been able to enjoy similar savings. Write for information.

PISTON RISES NEARLY TO TOP—MINIMUM OF WASTE SPACE
CAN BE BUILT ANY SIZE • NO CONTAMINATION OF GAS

1. Space above piston completely ventilated
2. Wide clearances simplify operation.
3. Gas-tight frictionless seal not affected by weather.
4. Piston rests on bottom when empty—less than ⅛ of 1% dead space for purging.
5. Leveling device—independent of side wall—keeps piston level.
6. Fenders prevent all tension in seal.



Wiggins Gasholder

by GENERAL AMERICAN

WIGGINS VAPOR SEALS
GENERAL AMERICAN
TRADE MARK

General American Transportation Corporation
135 SOUTH LA SALLE STREET • CHICAGO 90, ILLINOIS

Offices in Principal Cities
Export Dept.: 380 Madison Avenue, New York 17, N. Y.
Plants: Birmingham Ala. • East Chicago, Ind. • Sharon, Pa.
In Canada: Toronto Iron Works, Ltd., Toronto, Ontario

Editorial:

Vote Yes Before June 21

NOT often in the history of the venerable gas industry has a device been created, presented or activated to give the industry an opportunity for continued promotional appearances before the buying public in a manner that combines the demand for attention in a widely-acceptable manner with full recognition of currently-effective techniques. Now, the gas industry has just such an opportunity—and, best of all, it has been tested and found to have value.

At the moment, however, it is just an opportunity. It is squarely up to the utilities to determine, and to record their determinations before June 21, if they want the full values of an energized Mrs. America Contest to promote more-and-more appliance sales—which is to say more-and-more gas sales.

Mrs. America is a glamour gimmick, without depending upon bust-thighs-and-hips statistics, that can deliver sales-powered gas and appliance buying promotion in the attractive dignity that has been traditionally associated with The Great American Family.

Some gas companies, representing a paltry 25% of the 48-state meter total, participated in the 1954 contest and they regard it as one of the most effective promotions in which they have participated—despite the miserable preparations that were made for it on a national basis. A summary of the contest finals, presented on page 46, indicates the potential for a new fully-planned and vigorously-operated contest program. American Gas Association's report of its program for a new contest has many new and realistic features. We have no reservations in expressing the opinion that it is a program destined for success. But, as an afterthought, we *do* have one reservation—it hinges on the extent to which the gas companies commit themselves to participate in the program.

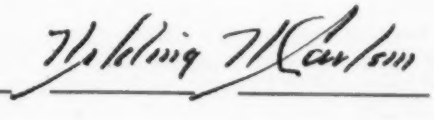
The AGA general promotional planning committee certainly set a most conservative minimum, when it determined that not less than 35% of the meter total would have to be represented in the new contest commitments by gas companies. Considering the 1954 contest to have been simply a test—we're momentarily-generous, there—it seems incredible that gas company executives, generally, will not be quick to see the immense possibilities for publicity-public relations-press agentry-promotion in a program that extends from local-to-state-to-national levels, over a 10-months' period.

As we look for not less than a 70% turnout, we find high encouragement in the wholehearted expressions of *some* industry leaders who have already endorsed the new contest and entered their companies in the list of participants. Incidentally, our best compliments to those early-and-favorable voters.

Mrs. America would be a gas industry exclusive, if it is voted in. But, *gas industry exclusive* does not mean that it should be left just to the utilities or just to the utilities and AGA. The appliance manufacturers have to crowd into the act if it is to achieve the highest degree of effectiveness. In that connection, it is up to AGA to actively seek the *vital* ideas, material, cooperation and individual participation of manufacturers, associations and the LP segment of the industry.

Here is an industry-wide promotion. Large and small gas companies can participate, effectively. The new plans for participation put the program on an economically-equitable basis. Everybody can win in this contest through thoughtful and continuing industry coordination.

June 21 is the voting deadline. We urge the appropriate company executives to write, wire or 'phone AGA immediately and, we hope, with more "Yes" votes. Mrs. America *can* be made the most important and effective factor in publicizing and promoting gas and gas appliances during the rest of 1954 and well into 1955.



Some New Economic Implications For The Natural Gas Industry

by Gordon C. Griswold

Assistant Vice President
The Brooklyn Union Gas Company

THE natural gas industry is one of the most rapidly growing industries of the country and, almost overnight, has developed into a major supplier of energy. As recently as 1940 natural gas supplied 12% of the Nation's energy requirements; today it is above 20%. It is not surprising that such a rate of expansion would create growing pains—not usually of long-term significance.

Gordon C. Griswold

There are, however, a number of trends developing which should give concern to all of us in the industry.

Up until the late 1920's natural gas markets were located relatively close to the supply. In the 1930's new pipeline design techniques and improved metallurgy for large diameter pipe demonstrated the feasibility of long distance pipelines. This was the start of the modern natural gas industry with gas transported vast distances from the Southwest to all regions of the country with the lone exception of the Pacific Northwest.

It is worthwhile to pause and reflect a bit on why this huge demand for natural gas arose. The answer, quite simply, is that natural gas in almost all areas was the best fuel buy in the market. Furthermore, in most of the earlier Northern and Eastern natural gas marketing regions, the quality of home heating in competition with gas was decidedly inferior. Coal heating systems, whether hand-fired or stoker-operated, left much to be desired. Natural gas had the double attractiveness of being cheaper in cost and providing a fully-automatic, clean fuel service. Oil, which also provided automatic service, was the prime competitor, but in most instances the cost of gas was lower or about even with oil and could beat oil on the basis of its other advantages. Gas became the dominant home heating fuel in many parts of the country, limited only by the availability of new supplies.

But a vast Northeastern marketing region, which may be roughly delineated as the area north of the Mason-Dixon Line and east of the Alleghany Mountains, remained untapped by natural gas until the late 1940's. It is a region with a population of about 37,000,000 and an estimated 8,000,000 private homes. At one time coal was almost the exclusive fuel for central heating in this area. But, in the absence of natural gas, oil moved in. Oil is relatively cheap in this area as the bulk is brought in by ocean-going tankers. This became one of the great dumping grounds for residual oils created in connection with the growing national demand for gasoline. Its price was low and, as the cost of coal rose, oil actually became cheaper for home heating. As a consequence, millions of oil installations were made and represent today a total consumer investment that is estimated to be in excess of $1,500,000,000. Oil is now the dominant fuel in this great market area. In this market, natural gas faces quite different competition than in other great market areas such as Chicago, Minneapolis and Detroit. What are the differences?

1. The cost of natural gas is high. In fact, in many parts of the region the cost of heating with gas is higher than oil.
2. Home owners with efficient automatic fuel service are not going to scrap readily an investment in oil burning equipment in excess of $1,500,000,000.
3. The oil burner dealers and oil suppliers are not going to surrender this rich market without a stiff fight.

And what is true for the Northeast is substantially so in many of the established Northern markets where limitations of natural gas supply have made it possible for oil to gain as the gas utility was forced temporarily to retire from the heating field.

Part of the basic demand for gas heating is the traditional urge of Americans to improve the ease of living. A large portion of the lush market which existed in non-automatic heating over the last 20 years is gone. Today, in the large Northern metropolitan areas, the majority of homes have automatic heat, either oil or gas. There is a large potential demand for gas heating still to be realized. It will come much harder, however, than the load attached to date.

The price relationship between gas and oil will be increasingly important in determining the pace at which the remaining potential is realized. Conversely, the form value of natural gas will decrease in importance.

In the report issued in November 1952 by the Petroleum Administration for Defense, an estimate was made that by 1955 the saturation of gas heating in American homes would be more than 70%, and the growth of gas heating would be approaching the leveling-off stage. Regardless of the exact timing, it is evident that we are within sight of the practical limits of maximum saturation of the gas heating market. Heating load growth, when this point is reached, will depend upon the rate of population increase. This raises some serious implications for the industry.

Where is future load-growth?

When the heating market reaches the maximum point of saturation, where does the load-growth come from?

It is wishful thinking to expect much from the other major residential utilizations. In all parts of the country, gas is facing a stiff battle from the electric industry for the cooking, refrigeration and water heating load. The commercial loads are limited as this market is closely related to the residential customer and its growth is primarily a factor of population.

The industrial market does have potentials for considerable added growth.

It appears to me that there are three important fields for future growth:

1. Residential air conditioning
2. Industrial utilizations
3. Large building heating.

The potentials are large in all 3 markets, but the competition also is very strong.

Opportunities and problems

For quite a few years, home air conditioning, while strongly appealing in the Southern regions of the country, had no great demand in the North. The cost of central air conditioning equipment was high. But a decided change is taking place. A number of factors are probably responsible. First is the fact that summers seem to be becoming hotter. Then, too, a large percentage of offices, restaurants, theaters and other public buildings are now air conditioned.

Electric room air conditioners of the

window type are without doubt one of the fastest-growing home appliances available today. These are relatively inexpensive and provide quite satisfactory air conditioning of the bedroom where they are usually located. Increasing numbers of people are getting a taste of air conditioning and they like it.

Gas has some distinct competitive disadvantages in this market. It has no suitable equipment for separate room conditioning. Gas distribution systems, with few exceptions, serve predominantly built-up areas. Most of the market for gas air conditioning consists of existing homes. Such homes, except those with duct warm air heating systems, present real problems when it comes to central air conditioning. New developments are making it possible to tie in air conditioning with steam and hot water systems and such installations are being made in large commercial buildings.

Here is a spot where an adequate research effort supported by the gas industry is needed. The market is large, but to realize it adaptable gas equipment, which does not now exist, must be developed.

Gas has long been a major factor in the fuel supply of industry. As a matter of interest, more than one half of the industry's sales volume results from sales to industrial customers. Much of the industrial load heretofore attached by the natural gas industry has been acquired on a strict price basis. Because space heating has a low annual load factor, large volumes of gas have been available for off-peak summer use at a cost slightly above the straight commodity cost of natural gas, but considerably below the cost of competing fuel.

In contemplating the industrial market, we must always be aware that cost of the fuel is the prime selection guide. The advantage of gas in utilization efficiency for residential equipment is not present when applied to the large volume requirements of modern industrial fuel-burning equipment. As the need for peak winter gas for space heating levels off so will the availability of cheap off-peak gas. This will be accelerated as new reservoirs for underground storage are developed near the market regions.

Can new pipeline capacity be constructed on an economically-sound basis for supplying a predominantly industrial load on a year-'round basis? This will depend upon the city gate cost of natural gas in the major industrial regions of the country.

Firm industrial gas essential

At a given field price, industrial gas should be supplied at a lower cost than other usages of gas due to its high load factor. Firm industrial sales in 1950, for example, had a load factor of 77% compared with 29% for residential sales including house heating. Under the usual form of demand-commodity rate this means a pipeline cost of industrial gas about one half that of residential gas. However, at delivered prices at the city gate, in excess of 40¢ per Mcf, gas will have difficulty in competing with heavy oil and coal. The availability of low cost off-peak gas for industrial use will dwindle in the future and the additional development of industrial gas sales will depend on acceptance of gas as a year-'round fuel.

There is another factor concerning gas as an industrial fuel which the gas industry must give serious consideration. This is continuity of supply. Too often, in the past, we have regarded supply to industrial customers on a when-and-if-available basis. In times of peak demand we have curtailed the industrial customer to maintain service to the residential customer. In the large scale continuous type of operation of the modern industrial plant this is a serious defect in fuel supply. We may conclude, therefore, that our future success in raising the volume of industrial sales will depend on low cost and an assured year-'round supply.

There is a large fuel market in the major cities of the Nation which has so far been lightly touched by natural gas. This is the heating of large commercial buildings. In this field natural gas has important advantages not related to cost. Increasingly we read of smoke, smaze and smog blankets descending on cities. City officials and health authorities are seriously concerned; more and more pressure is being exerted by all cities to reduce the smoke nuisance created by industrial plants and commercial buildings.

The smokeless combustion of natural gas makes it an ideal fuel to meet the problem. But we cannot expect the obvious desirability of gas in this situation to produce a real demand. In New York, to approach costs of building heating with coal or heavy oil, the gas cost to the building owner must be less than half the current cost of home heating. Undoubtedly the form value of gas in this instance supports a premium price over other fuels, but it is a premium with a definite limit.

We in the industry must also realize that the traditional residential base loads of cooking and water heating are facing increasingly stiff competition from electricity. Now, the heat pump is assuming greater importance as a method of central heating and air conditioning. It is true that the national saturations of gas cooking and water heating are so high that future growth from these loads will at best be nominal. It is also true that losses of these loads will create serious problems.

An important reason for the growth of house heating has been the ability, up to now, of maintaining a large base load in cooking and water heating at rates which permitted the absorption of many of the fixed costs of the marketing utility. If these loads with good load factor and high revenue begin to slide off it will be necessary to make up the deficiency by increasing the rates for house heating.

Gas Utility Executive Looks Ahead And Sees Many Unsolved Problems

Plea for joint action

Certainly from the standpoint of all parts of our industry—the producer, the pipeline, the distributing utility, the liquefied petroleum company and the appliance manufacturer—here is a clear case of the necessity of acting jointly to preserve our individual stakes in the business. This means that we must all reexamine, with honest objectivity, our existing attitudes on contributing to industry-sponsored research and promotional plans.

It is always easy to build a strong case for not participating with hard cash in a general industry endeavor. It takes real business statesmanship to look honestly and without bias at expenditures today which protect future profits. We must sustain the growth of our business. It is only through growth that we can survive.

Most of us, who are not directly involved in advertising or research, have grave doubts that the cost of these things is justified. We are too-often critical when we cannot spell out value in the form of a cost and profit statement. We must remember, however, that the American consumer who calls the tune for us does not buy—*he must be sold.*

Here is one of the industries in the "first 10" of American business which has no national radio or television coverage, and a national advertising program representing less than 1/10 the expenditure by one of the larger electric appliance manufacturers.

With the exception of our valiant colleagues in the LP gas business, ours is a fixed and stationary market. When one territory fades we cannot pick up our pipes and move elsewhere. We certainly will further extend our markets physically. In the final analysis we must find our future in intensive growth of what we have.

An indecisive France, weakened by factions which could not see beyond individual self-interest, crumbled in the face of war and flounders along today as a sad caricature of a once-great nation. We must be sure that, as an industry, we do not make the same mistake.

We must first realize that our product is competing with all other forms of energy. The easy days of taking orders are over. The tremendous price advantage we enjoyed, up to now, is rapidly dwindling. The premium value of gas, with which we have beguiled ourselves, does exist but we must determine more effectively what it amounts to and then we must convince the customer that it is valid.

This should be an industry-wide promotion for the gains or losses in Ames, Iowa, in some measure are reflected in Houston and Brooklyn.

John Donne expressed the same idea over 300 years ago, "Any man's death diminishes me, because I am involved in Mankinde. And, therefore, never send to know for whom the bell tolls. It tolls for thee."

We must not delude ourselves that the

(Continued on page 36)

by M. P. Barbarin

Dowell Incorporated

New York

THE removal of troublesome deposits from process equipment is a frequently recurring problem in many industrial plants, and maintenance engineers are finding that chemical cleaning provides an answer for this problem. By the application of proper solvents, such scales and residues can be dissolved readily. Chemical solvents can be applied through existing lines and valves, eliminating the necessity for extensive dismantling of equipment such as is frequently required during mechanical cleaning, in order to reach the deposits. Chemical cleaning proceeds at a rapid rate, and the dissolved deposits are simply flushed away with the spent solvent, following the treatment. Economically, this results in considerable savings to the plant operator, not only from the standpoint of manpower and materials, but in the elimination of lengthy shutdowns and consequent production losses.

Problem of deposits

Many kinds of profit-stealing deposits are found in the different types of industrial equipment. They all add up to the same thing; reduced efficiency resulting in increased operating cost.

In heat exchange equipment, these foreign materials slow down the rate of heat transfer, increasing the unit cost of heating or cooling operations and, in many cases, reducing the overall operating capacity of the equipment. The volumes of such deposits often become so great that the actual flow of water or process liquids through the equipment is impeded, further reducing the operating efficiency of the unit. Cases have been found in pipelines, where scale accumulations have reduced the flow to only a small fraction of the original capacity of the line.

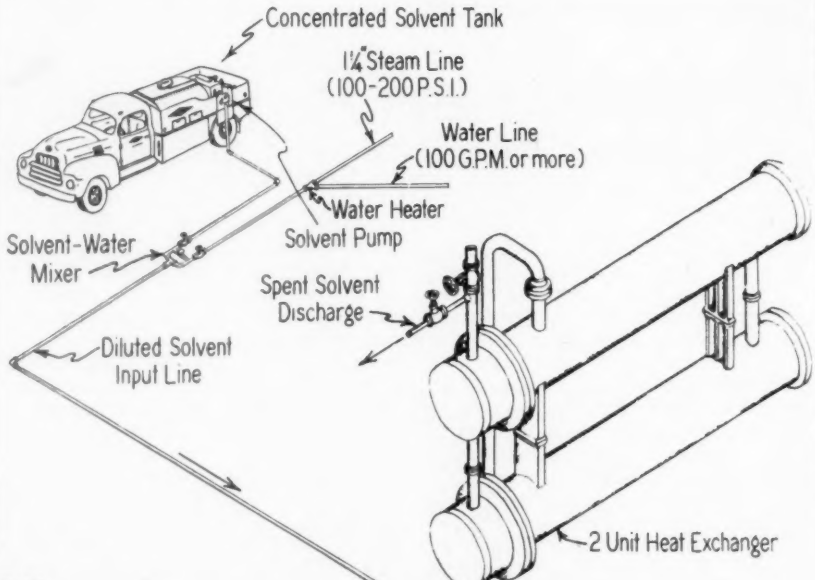


FIGURE 1, above, hook-up diagram, showing the application of liquid chemical solvents to remove unwanted deposits from process towers or columns.

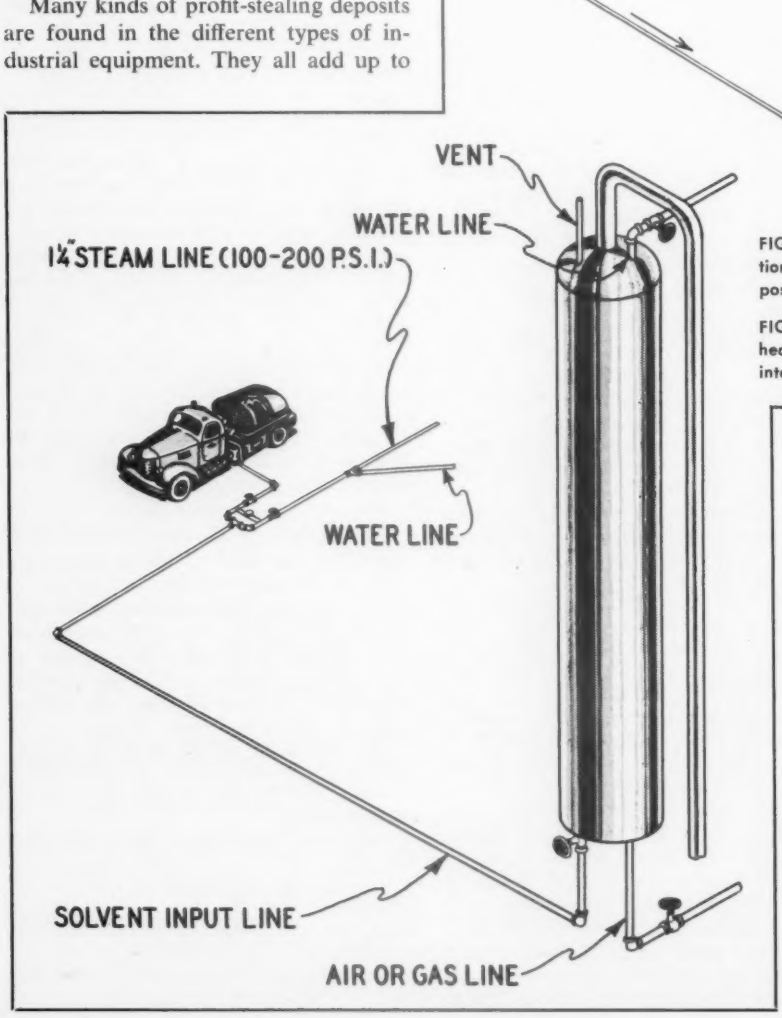


FIGURE 2, left, most scale-removal treatments, such as the heat exchanger shown here, are conducted by hooking into existent lines and connections.

The chemical and physical nature of these deposits depends, of course, upon the conditions under which they were laid down. The principal constituents of most water-deposited scales have been found to be carbonates, phosphates, silicates and sulfates, occurring singly or in combination. Frequently, metallic oxides or sulfides may be present, in addition, as a result of operational cor-

How Operating Equipment Is Cleaned Without Dismantling

Mobile trailer units transport the chemical solvents to the job location; heavy-duty truck-mounted pumps are utilized for high pressure applications.

rosion. The above type deposits usually are broadly classified as inorganic.

A more recent application of chemical cleaning has been the removal of organic deposits, which are frequently found on the process side of industrial heat exchange equipment. These deposits may range all the way from simple oils and waxes to highly-polymerized residues, baked onto the surface of the equipment in hard, varnish-like coatings. In some cases, partial decomposition and carbonization make these deposits even more difficult to remove.

The above classifications are necessarily broad, and literally cover hundreds of different chemical compounds and mixtures. In most cases it is necessary to obtain samples of the deposit and subject them to laboratory analysis before any cleaning is attempted.

Chemical cleaning solvents

It is apparent that with such diversity of deposits, no one solvent could be expected to efficiently remove all of them. Even the various types of inorganic scale deposits cannot be dissolved by any single solvent. It is therefore necessary, in chemical cleaning, to employ a wide range of chemical solvents. Since the list is too great to include here, however, these solvents can be grouped into a few broad classifications: acids, alkalies, oxidizing agents, hydrocarbons and chlorinated compounds.

The choice solvent that will be most efficient in removing any particular deposit is usually determined during the laboratory examination of the scale sample. Comparative solubility tests indicate not only the type solvent to use, but optimum treating conditions, insofar as solvent concentration, temperature, etc., are concerned. Other factors which are taken into consideration in choosing a solvent are the types of metal that may be encountered in the unit, the design of the equipment to be cleaned and any possible resultant safety hazards.

In general, the carbonates and phosphates are readily dissolved by acids. Hydrochloric acid generally has been found to be most satisfactory as a chemical cleaning agent, for these type deposits. Certain sulfates, however, either alone or in combination with other compounds, may exhibit only limited solubility or disintegration in the presence of acid solvents which are insufficient for successful removal. In such cases application of more than one solvent is usually required. For example, successive stages of alkaline and acid solvents might be utilized, the solvent concentration, temperature, pressure and contact time being predetermined from the laboratory examination, together with an appraisal of previous field history.

When silicates are encountered it is the usual practice to add fluorides to the acid solutions, in order to obtain the necessary dissolving of the silicate compounds. The presence of fluorides in the acid will also prevent the silicates from forming gelatinous compounds that might coat over the surface of the deposits, sealing them off from further reaction with the acid solvent.

Oxides and sulfides usually yield readily to treatment with acid solvents. In the case of sulfide deposits, however, there is a safety problem in that the reaction product is poisonous. Sulfides in contact with hydrochloric acid liberate hydrogen sulfide gas, which is extremely hazardous even in small quantities. Fortunately, the sulfides can be readily identified during laboratory examination of the deposit, and prearrangements made to scrub the gas in a caustic scrubber or vent it through a flare system.

Such a wide diversity of organic deposits are encountered in process equipment that it is impossible to make any generalizations regarding the type of solvent best suited for their removal. Here again, laboratory examination of samples of the deposit concerned facilitates choosing the proper solvent, or combination of solvents, that will result in disintegration and removal of the organic material.

Chemical cleaning equipment

The equipment required to conduct a chemical cleaning job varies with the size of the industrial installation. For a simple job, a tub with pump and hose might be adequate; but for normal chemical cleaning operations, highly specialized mobile equipment, such as that shown, is used.

These combination transport and pumping units perform a number of functions. They serve to mix the solvents, transport them to the job, and apply them to the units to be cleaned. The chemical cleaning service truck carries a storage tank, a centrifugal pump for high volume pumping and a triplex pump for handling high pressures. Also, it has metering equipment and a jet type steam heater. Equipment of this sort must be maintained in excellent condition at all times since any failure of the cleaning unit, once a cleaning operation has begun, can seriously affect a maintenance schedule.

Application of solvents

The manner in which solvents are applied and the conditions under which they are applied vary widely, depending upon the size and type of equipment to be cleaned, the quantity, physical characteristics and chemical composition of the deposit, and how difficult it will be to dissolve or disintegrate. The action of the solvent on the deposit to be removed is influenced by four factors: Concentration, temperature, agitation and time of contact.

Generally speaking, increasing any of these factors will increase the effectiveness of the solvent. In practice, this is not always possible, due to the limiting factors which must be considered, such as costs, personnel hazard, corrosion of metal equipment and, of course, the

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Lack of Coordination in Gas Industry Seen as Basic Weakness by Griffin

THE unintegrated gas industry holds a high potential for effective competitive promotion under an industry-wide, skillfully-created and fully-integrated program that recognizes the extreme measures that must be taken to insure success, H. K. Griffin, outgoing president of Southern Gas Association, emphasized in his address to the recent Convention.

H. K. Griffin

"Until that recognition is achieved, little progress will be made," he forecast.

The cotton industry was presented in a convincing manner, by Mr. Griffin, as having had a comparable situation which was recognized as the common interest of 6 different and uncorrelated groups that "previously had carried on their businesses independently and sometimes at cross-purposes, even though all had one interest in common—cotton."

With the advent of synthetics and their rapid development in the textile industry, Mr. Griffin, vice president of Mississippi Valley Gas Co., recalled that the cotton industry faced greater competition than it had ever before experienced. Industry leadership realized that the 6 different groups had to band together quickly and effectively for the battle-objective of maintaining production at the 1920-1938 level of an average of 6-million bales per year.

In face of the magic-fabrics produced from the new raw materials of the chemical industry, the reconstituted cotton industry developed new finishes, new weaves and new uses, with the result that cotton production during the last 7 years has averaged 9.3-million bales per year—more than 50% higher than the goal that the industry set out to reach.

The formerly-unintegrated cotton industry, in its wisdom of competitive foresight, formed the National Cotton Council in which all elements of the industry found and acted forcefully in widely-diversified programs that have brought cotton to the position of being fashionable. Now, cotton is also being treated with chemicals to form new substances and new uses for cotton in industry are being developed at a rapid rate.

"All this is interesting and exciting," Mr. Griffin said, "but the important point is that it is being accomplished by a *united* industry, working toward a common goal, through an intelligently planned, adequately financed campaign carried on consistently year in and year out.

"The cotton and gas industries have surprisingly much in common," Mr. Griffin asserted. "Each has a basic product, essential to the public good. Each survived through a long period of years without troublesome competition and each took its prosperity pretty much for granted. Each was composed of separate business groups with little joint activity.

"Suddenly a husky rival appeared on the scene and danger threatened each of them. The cotton industry won its war. Is there any reason why the gas industry should not do the same?"

Then, going directly to the heart of his considerations, Mr. Griffin made some highly-pertinent and not-usual comparisons.

"What is to be done to reverse the unfavorable trend in consumer-acceptance of gas fuel and gas appliances? The first obvious answer is more promotion and more effective promotion. . . .

"That the gas industry has been completely outclassed in industry promotion is reflected in the number of dollars spent by the 2 industries [gas and electric].

"In the 7-year period, 1946-through-1952, the total national advertising covering electric ranges, water heaters, clothes dryers and refrigerators had a direct cost of $71,467,000. In the same period $15,-867,000 was spent advertising the same gas appliances. Adding to these figures the cost of preparing television and radio programs, the figures become approximately $96-million and $16-million, respectively —a ratio of 6-to-1.

"Is it any wonder that we are not out in front?

"There have been other contributing factors," Mr. Griffin continued, "such as the slowness in upgrading gas appliances, both in appearance and performance, ineffective marketing methods and the greatly delayed realization of what electric competition was doing to the gas industry.

At the end of 1953, and using figures only for privately-owned electric companies, there were invested in plant and property of the electric industry $25½-billion; of the gas industry, $11½-billion.

"Gross revenues of the electric utilities were just about $6-billion; of the gas utilities $4-billion. Electric net income was a little over $1-billion; for the gas business, it was one-third as much.

"There is food for thought here—2/3 as much gross, 1/3 as much net. This is too great a discrepancy for 2 such similar industries.

As to customers, there were 50 million electric customers at the end of 1953, while there were about 27 million users of gas. New construction by the electric companies was $2.85-billion and $1.3-billion by the gas industry. The estimates for 1954 construction are $3-billion for the electric and $1.2-billion for the gas industry.

"The indication of all these figures is that the gas business is about half as big as its competitor. That, in itself, is not particularly important, for considering size alone, the gas industry is big—very big.

"In studying the future of the industry, there is a point of real significance in these figures. The point is that our competitor, all other factors being even, should have about twice as many dollars to spend on industry promotion as will the gas industry. That is a very important point to keep in mind.

"Assuming that good judgment would prevent the gas industry from ever attempting to match promotion dollars with the electric industry, it is of the greatest importance that every dollar we spend for industry promotion be spent to yield the most productive results.

"Now consider . . . another comparison; one that points up an inherent weakness of the gas industry. The electric business in most instances is carried on by a self-contained organization, serving a relatively compact area, and having under its own control the generation, transmission and distribution of electricity. By contrast the natural gas business is made up of 3 distinct parts, usually operated by unrelated companies, bound together only by contractual obligations, and over areas extending literally thousands of miles.

"Let us consider one direct effect of this. Additional business appears to be available on the distribution system of an electric utility. This immediately starts a chain reaction clear back to the electric generating end of the business. By a completely coordinated operation, in one corporate unit, new generation, transmission and distribution facilities are made available to handle the new business.

"By contrast, new business available to a gas distribution company, requiring additional gas supplies, can only result in a request to a transmission company for more gas, with no assurance as to whether or when the request can be granted. The transmission company, in turn, must hunt for more gas supplies to build up its reserve to the point where the Federal Power Commission will permit it to sell the additional gas to the distribution company. It may well be that there is no gas available at the moment within a distance that makes it economically feasible for the transmission company to obtain it. So that new gas business may wait a long time for its gas supply.

"The effect of the unintegrated charac-

(Continued on page 30)

Payne Reports On 10-Cities Test To Southern Gas Convention

NO utility should sit back and wait for the results of the Action Demonstration Program, in the 10 test-cities, as part of the gas industry development activities, Christy Payne, Jr., vice president, The Peoples Natural Gas Co., Pittsburgh, told the sales section of Southern Gas Association during the recent Convention.

Christy Payne, Jr.

"They may find that while they are waiting, competitive elements will be entrenching themselves in positions from which it will be almost impossible to dislodge them," he emphasized.

Mr. Payne told a well-packed SGA audience that many of those involved in the 10-cities Action Demonstration Program have become more and more convinced that 12 or even 24 months of testing is too-short a period to measure the full impact of added activities and organizational changes.

"We are coming to the belief," he said, "that the real value of the activity can and must come from a subjective evaluation of changes of attitude by consumers and all sales allies, the encouragement offered through these experiments to other gas companies to do more, and the critical internal company appraisal of its past practices and the effectiveness of the various new activities."

An intensive application of the 15 points recommended by the joint American Gas Association-Gas Appliance Manufacturers Association recommendations for gas industry development was the basis for the Action Demonstration Program in the 10 cities.

In what is believed to have been the first general revelation, Mr. Payne gave the SGA Convention the list of cities that are participating in the test. They are Springfield, Mass.; Ocean City, N. J.; Altoona, Penn.; Fort Wayne, Ind.; Savannah, Ga.; Lansing, Mich.; Albuquerque, N. M.; Pasadena, Cal.; Lincoln, Neb. and Abilene, Tex.

The market surveys conducted in each of the cities, Mr. Payne explained, had 2 major objectives:

1—What is the public acceptance of gas appliances as compared with competitive appliances? What is the trend and why?

2—The establishment of sales potentials in the local area and the more efficient use of sales and promotional efforts to fit local situations.

Results of 6 market surveys from test-cities have been made available to indicate that there is a general corroboration of national trends in domestic gas appliance acceptance which have been shown by other studies made since 1950.

Mr. Payne pointed to significant indications.

"1. Although gas continues to enjoy a very high degree of acceptance for cooking and water heating in most cities, electricity has already made or threatens to make serious invasion of these important loads. There seems to be a discernible variation among age groups. The younger women interviewed showed stronger preferences for electric than did older women. Incidentally, in all of the six surveys thus far made available, over 90% of all those interviewed were women and thus the results represent the housewives' viewpoints.

One well-above-average housewife, with 40 years of homemaking experiences throughout the United States and in Europe and the Near East, told American Gas Journal last month that she had viewed the electric range in her newly-occupied home with active apprehension after complete dependence upon gas ranges. And—there is no gas service connection to her house. One week later she was entirely under the spell of that electric range!

"2. The reasons stated for preferences for electric appliances over gas indicate that many preferences, and even stated buying intentions, are based upon emotional rather than reasoning factors. And in nearly all the cities surveyed, there were large numbers of those interviewed who did not even know that there were such things as gas refrigerators and gas dryers.

"3. While large groups of households presently using gas appliances stated a preference to change to electric if they were to buy a new appliance now, very few of the present owners of electric appliances would consider a change to gas.

"4. Over 90% of the respondents in all of the surveys stated that they were satisfied with the amount of hot water available. This was true of both gas and electric water heater owners, including those households with automatic washing machines.

"5. In each of the cities surveyed, over 90% of the gas customers who had at any time used the servicing facilities of the gas company stated them to be satisfactory. Generally, smaller proportions of electric customers had used the service facilities of the electric company, than had gas customers of the gas company, but they seemed equally satisfied in the speed and quality of that service.

"6. Insofar as immediate buying intentions were concerned, television sets were considered of more importance to many families than other household appliances. This is in the face of the fact that in many cities more than 25% of the gas ranges in use are over 10 years old. Here is an indication of the type of competition for the consumer's dollar that lies ahead; not just between similar products, but among all products."

Specific considerations relating to individual appliances, that were found to be generally true in all cities, were cited by Mr. Payne.

Ranges

"Let's compare the actual gas range saturations, discovered in some of the cities surveyed, with what the saturations would be if the preferences stated by all those interviewed were to be fulfilled at this time.

"In one city, the present gas range saturation is 83%. If new purchases were made according to the stated preferences of all those interviewed at the time of the survey, the gas range saturation would be 59%. In another city, the actual gas range saturation proved to be 92%. If preferences were implemented immediately, it would be only 64%. In still another city the comparative percentages were 86 and 65%.

"The disturbing feature in back of these figures is that the upper income group intends to desert us in great numbers, leaving us the middle and lower income groups. These are the backbone of the buying public, of course, but I am not reconciled to the loss of the opinion-influencing upper income group.

"To find the reasons for this situation, the interviewers were asked why they prefer a gas or electric range. Here again, the answers followed similar patterns in all of the cities surveyed. Those claiming a preference for electric ranges had more specific reasons for their choice than did those preferring gas ranges. Those preferring electric ranges also felt more strongly about their reasons . . . they mentioned the major reasons for preference a larger proportion of the total replies than did those who stated a preference for gas.

"As an example—let's compare the intensity of the major reason given for gas and electric range preferences in one of the cities. Those preferring gas mentioned, "habit—or used to gas range," 28% of the total replies. Those stating a preference for electric ranges mentioned, "cleanliness," 66% of all the reasons offered.

"There are many reasons mentioned which are claimed by both those preferring gas and those preferring electric. This fact, plus the large number of those who vaguely say about gas that they "just like it," are an indication of much misconception and plain lack of information.

(Continued on page 32)

Needs for Firm Industrial Gas Service Now Under Specific Study

by Paul E. Peacock, Jr.
President
Peacock Corporation
Westfield, New Jersey

THE industrial gas engineers representing utilities in all sections of the country, assembled in Chicago during mid-April for American Gas Association's sales conference on industrial and commercial gas, heard an able presentation on "Industry Needs Firm Gas" by Ralph L. Manier, gas sales engineer, Niagara Mohawk Power Corp., Syracuse, N. Y. Mr. Manier is chairman of the AGA industrial gas study subcommittee and is a former chairman of the industrial and commercial gas section.

Paul E. Peacock, Jr.

As an introduction to the currently-important subject of industrial gas, Mr. Manier reviewed its history and then pointed out some of the serious problems created for the natural gas industry by the domestic heating loads which, in many instances, have gone almost out of control because of the generally low cost of natural gas for heating, compared with other fuels. As opposed to this he mentioned the history of the peak loads of the manufactured gas industry which used to come on Thanksgiving and Christmas and were not controlled by a heavy heating load due to the cost of gas which made gas heating a luxury until recent years.

Mr. Manier included as a part of his paper the report of the AGA industrial gas study committee, dated December 21, 1953, with these recommendations:

1. Industrial gas customers should be given adequate warning of any change in the kind of service being supplied.
2. Gas sold under interruptible rates or contracts would normally bear a price differential commensurate with the type of service rendered, i.e., the degree of interruptibility.
3. Customers purchasing gas under interruptible rate schedules should be fully informed with regard to the provisions for curtailment or interruptions of service, and such customers should provide and maintain standby facilities and adequate fuel supply, so that they will be able to accept the interruptions as directed without serious inconveniences to operations or personnel.
4. Where necessary, every practical means should be used to educate members of the regulatory bodies of the importance of a firm supply of natural gas for industrial loads, other than interruptibles.
5. It is generally accepted that industrial gas customers are willing to pay a higher rate for a firm gas supply where this type of service is required and that they are then entitled to receive the services for which they are paying. Where gas is an absolutely necessary fuel for an industrial operation it should be sold on firm contract regardless of load-size.

Mr. Manier advised that the report of the committee was well received by member companies and that where any objection had been made, they were associated with the recommendations made in paragraphs 4 and 5.

Paragraph 4 recommends education of regulatory bodies to the importance of firm gas for industrial loads. Apparently, most utility management groups would prefer to retain control over whether an industry should be on a firm or an interruptible gas rate. It doesn't take a strong imagination to think what repercussions would follow if the utility was forced to curtail gas to an industry classed as non-interruptible by the regulatory body.

Paragraph 5, in the last sentence, recommends that firm gas be sold without limit of load size. This does not take into account the ability of the utility to serve the load or other important considerations. Therefore, it is only natural that the utility should want control over the size of *any kind* of load the utility would be required to serve.

Audience reactions

Following his presentation, Mr. Manier asked his audience several questions to get some indication of the importance of the subject he had discussed.

The group was asked whether any of the natural gas utilities represented had lost business because of not having a firm industrial gas rate.

In this group of industrial men from all sections of the country, the author saw no hand raised as affirmative reply to the question. Mr. Manier advised later, however, that following the meeting he had been approached by a number of men saying that they had lost *potential* gas business in special furnaces because they could not give firm gas rates for such special applications.

The second question, a modification of the first, asked whether anyone felt their company could get additional industrial loads *if* they could offer firm-rate industrial gas. To this question several hands were raised.

A utility representative from the South got up to make a short appraisal, and expressed the opinion that the question was somewhat misleading. He pointed out that, in his area, utilities had been approached by city representatives and others who *claimed* that "if the utility could offer firm-rate industrial gas" a new and important industry could be obtained for the area. He pointed out, further, that upon investigation many of these inquiries had been almost "form" letters which had been mailed to many sections of the country, and upon complete investigation many of the firms expected firm-rate gas at "dump" prices. It was apparently a case of the industry wanting to "eat the cake and have it too."

With many industrial gas representatives from all over the country, it would seem that their reaction to the demand for firm rate gas would be a good indication of its real importance. There is no question as to the need for firm gas for *certain types of industrial usage,* but it must not be assumed that *all industrial gas* can be or must be on a firm rate.

Following his presentation, Mr. Manier stated to the author, that the scope of operations of his subcommittee had been broadened to cover a study of:

1. Operations where gas is absolutely necessary,
2. Operations where gas is essential, and
3. Operations where gas is preferred.

He pointed out further that his subcommittee is preparing a list of applications the members feel would fall into the above classifications. This list will be expanded and made available.

Mr. Manier summed up the views of many natural gas men when he said, "Seasonal gas rates and interruptible gas rates will still have to be used by those utilities who buy natural gas on the block rate or on the demand and commodity rate basis."

With most of the foregoing much of the natural gas industry is in full agreement. This might well be summarized:

1. Industrial gas consumers on interruptible rates *should* be given ample warning of any change in the type of gas being served and any interruption or curtailment of that service.

(Continued on page 39)

Corporate Capital Expenditures Expected to Duplicate 1953 Mark

by John F. Falvey

Financial Editor

A SIGNIFICANT feature of recent weeks is the revised estimate by manufacturing corporations of their planned construction expenditures for 1954. They now set the figure at approximately $12.3 billion, for a gain of about one billion dollars above original estimates made some months ago that 1954 plant spending might fall some 7 or 8% below last year's shade under $12.3 billion.

John F. Falvey

With other segments of the corporate economy still holding to original estimates that their construction outlays this year will be some 4% below 1953, the overall result is expected to be just about a duplication of last year's capital expenditures for all corporations.

While corporate working capital currently is being expanded at only about two-thirds the previously yearly rate, the increase still approximates $2.8 billion a year and totals an estimated $92.7 billion.

Further aiding corporations to finance their contemplated large-scale property and equipment additions is the tremendous amount of cash now being generated, and expected to be raised, through enlarged depreciation accruals. No less than $30 billion certificates of necessity have been issued on new plants, of which about $18 billion may be written-off in a five-year period. It is estimated that one billion dollars of rapid amortization allowances was charged on such facilities in 1953, against only half this amount in 1952. Latest Department of Commerce estimates are that write-offs on this account will exceed $2 billion in 1954 and may grow to a rate of as much as $3.5 billion late in 1955. This would spell considerable augmentation of already large working-capital resources.

Bond yields have been creeping up a bit of late and new issues have had to carry a yield of no less than 3%, chiefly because of resistance of institutional investors to accepting a lower rate of return. Recent offerings at this yield level have had good reception but the calendar of coming issues is lengthening almost daily, and at this writing no less than $300 million of new corporate bonds and debentures is scheduled to come to market by June 30 for new money and refunding purposes.

If this list is increased to any great extent there might be a recurrence of the indigestion which bothered the bond market earlier in the year.

Fears on this score were one of the reasons underlying the action of the Treasury Department in deciding to restrict its June financing to the raising of but $2 billion of new money to cover the deficit and to refunding $7,286 million of maturing or called certificates. This represents a very small stretch-out of the Treasury debt maturities within the confines of Treasury Secretary Humphrey's policy of not competing with other borrowers for long-term money.

Despite the favorable basis on which the Treasury could finance to greater extent at present, any long-term financing of consequence probably will be put off until late in 1954 or possibly early in 1955. Careful scrutiny of the Treasury's position suggests, however, that the present rate of Government spending may necessitate the Treasury coming to market by the end of July with an issue of around $2 billion or $2½ billion to provide it with needed new money. Utility managements may do well to take into consideration this possibility in scheduling any offering which they might have in mind.

A greater total of deficit financing by the Treasury than now is indicated could be forced by a change for the worse in the international situation which would cause the Administration to increase its present limited budgetary provision for military procurement. This is a step which the Administration would take only with the greatest reluctance, but events beyond its control might not permit it any alternative.

As indicated in the action of the AMERICAN GAS JOURNAL index in currently attaining the lowest yield level it has reached in some months, the stock market as a whole has been giving a good account of itself. Accounting chiefly for this is the constant demand for sound equities on which earnings have been stable and dividend payments secure, and which still afford a fair rate of return.

Ability of shares of leading companies to appreciate in value while business has

(Continued on page 35)

INDEX OF YIELDS : SELECTED UTILITIES STOCKS

	May 1954	Apr. 1954	Mar. 1954	Feb. 1954	Jan. 1954	Dec. 1953	Nov. 1953	Oct. 1953	Sept. 1953	Aug. 1953	July 1953	June 1953
Natural Gas Transmission Companies	4.08%	4.15%	4.17%	4.25%	4.21%	4.39%	4.44%	4.44%	4.90%	4.46%	4.76%	4.72%
Natural Gas Transmission & Distribution Companies	5.01	5.11	5.27	5.39	5.39	5.54	5.49	5.58	5.74	5.13	5.41	5.55
Manufactured & Mixed Gas Companies	4.46	4.67	4.68	4.66	4.66	4.91	4.75	4.94	5.14	4.99	5.06	5.08
Class "A" Electric Companies	4.64	4.70	4.68	4.92	4.92	5.10	5.15	5.14	5.41	5.27	5.41	5.53
Class "B" Electric Companies	4.94	4.94	4.93	5.01	5.14	5.23	5.14	5.37	5.61	5.50	5.41	5.68

This is a straight arithmetical index of comparative yields obtainable on a selected group of gas and electric utility industry common stocks.

The companies comprising this index have been selected by the AMERICAN GAS JOURNAL as providing a representative cross-section of each industry, from the standpoint of geographical diversification and of the relative importance of the individual companies in their areas.

No effort has been made to weight the average to give effect to changes in capitalization or in dividend rates because the yields afforded on the issues reflect such changes. The index is designed to show the rate of return and not necessarily market movements on the stocks comprising it.

This index is compiled from: natural gas transmission companies, 5; natural gas transmission and distribution companies, 5; manufactured and mixed gas companies, 4; class "A" electric companies, 4; class "B" electric companies, 5.

Old Days Recalled... from AMERICAN Gas Journal

ESTABLISHED 1859

90 YEARS AGO

June 1864

NEW COAL GAS COMPANY. *The town of Fairmont, W. Va., is situated upon the southwestern bank of the Monongahela river, at its junction with Coal river . . . and it is in this vicinity that the richest gas-producing coals are to be found. A gentleman by the name of Watson has been working a mine of 14 acres, just outside the town, for ten years. . . . He has furnished the city of Cumberland with all its gas coal during the period . . . and has also supplied Washington city, Wheeling, the Manhattan works, N. Y., and other gas companies with all the coal he could possibly spare them, but not sufficient to meet their wants. Mr. Watson has from time to time purchased land adjacent to his mine, until he now has 600 acres in one mass. . . . We learn that the American Gas Coal Company of Baltimore had purchased Mr. Watson's interest in the 600 acres alluded to, and will at once proceed . . . on the largest scale, to develop all the resources of this valuable property.*

50 YEARS AGO

June 1904

MR. CHARLES A. CROSS, for more than 20 years Superintendent and Engineer of the Williamsburgh Works of the Brooklyn Union Gas Company, N. Y., has resigned his position on account of ill health.

JUNE 1904

MR. W. T. CARTWRIGHT has been appointed Superintendent of the East Ohio Gas Company, succeeding Mr. W. W. Richardson, who has been named General Superintendent of the Buffalo, N. Y., Natural Gas Fuel Company.

JUNE 1904

RESIGNATION OF MR. J. B. GRIMWOOD. With much regret, both on account of the cause and fact, we report the resignation of Mr. Joseph B. Grimwood from the dual office of Secretary and Treasurer to the Pacific Coast Gas Association. Ill health prompted his action. Mr. John A. Britton has been appointed to carry on the duties of the position left vacant by Mr. Girmwood's retirement.

JUNE 1904

THE SUPERINTENDENT AND ENGINEER of the Toledo (O.) Gas Light and Coke Company, Mr. Charles R. Faben, has planned an elaborate extension of the mains of the company to and through certain residential districts which have for many months been under the control of the electric lighting suppliers.

JUNE 1904

ACCORDING TO THE NEWSPAPERS of Chicago, the earnings of the Peoples Gas Light and Coke Company, of that city, for the 4 months ended May 31st, show an increase of more than 10%, over the same period in 1903. The remarkable feature of the gain is said to lie in that the company has not been obliged to extend its territory, or lay a single mile of new mains in accomplishing the showing. The growth is ascribed to density of the territory already served. New buildings and dwellings are being equipped with gas for illuminating and domestic purposes, which heretofore have clung to old methods. The gas arc light is growing more popular than ever, and it is estimated that the company will install 30,000 of these lights this year.

25 YEARS AGO

June 1929

WORK HAS STARTED ON *the construction of a 22-inch gas pipeline from the Monroe and Richland oil fields in Louisiana to Atlanta, according to an announcement made by officials of the Southern Natural Gas Corporation. . . . The contract calls for the delivery of natural gas to customers in Atlanta not later than December 31, 1929. The Central Public Service Corporation, recent purchasers of the properties of the Atlanta Gas Light Company and other Georgia gas companies, has entered into a contract with Southern Natural Gas Corporation for the distribution of its product.*

JUNE 1929

NATURAL GAS HAS BEEN FOUND *about five miles east of Mooresville, Ind. The pressure was so strong that it blew the drilling tools from the casing.*

JUNE 1929

TWO NEW WATERLESS HOLDERS *for Chicago will be placed in service some time next fall, according to a recent announcement of the Peoples Gas Light and Coke Co., Chicago. Construction has been started on the two 10,000,000 cubic foot waterless gas holders.*

JUNE 1929

ANNOUNCEMENT OF A NEW *$1,000,000 pipeline into San Antonio, Tex., bringing 30,000,000 cubic feet of gas daily more than the present supply, has been made by E. H. Kifer, Vice President and General Manager of the San Antonio Public Service Company.*

JUNE 1929

THE OLDEST GAS TANK IS STILL STANDING. *The first gas tank ever built is still standing at Smethwick, England, after 121 years of existence. The iron cylinder was erected in 1808 by William Murdock, founder of the manufactured gas industry, and a bronze memorial tablet was recently unveiled at Smethwick by the present gas company in his honor. Mr. Murdock died in 1839.*

American Gas Fundamentals

OUTLINE

NATURAL GAS
- *Geology
- *Drilling and completion
- *Methods of estimating reserves
- *Chemicals from gas
- *Natural gas conservation
- *Underground storage of natural gas

MANUFACTURED GASES
- *Coke oven gas; producer gas, blue gas carbureted water gas
- *Reformed gas
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- Interchangeability

LIQUEFIED PETROLEUM GASES
- *Sources, properties and uses

BASIC GAS LAWS
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TRANSMISSION
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GLOSSARY
- *Ab-to-Up

***Chapters published since January 1951.**

How to Use the Material

American Gas Fundamentals *is a comprehensive compilation of basic gas facts to guide any gas utility employee toward a broader understanding of the industry as a whole.*

The series is designed to be removed from each current issue of AMERICAN GAS JOURNAL *and filed in a ring binder where it may be accumulated into a text book of permanent usefulness. Material should be filed under the major subject head appearing in the upper right hand box at the head of each chapter.*

Gas Dispatching in Distributing Utilities

DISPATCHING gas continuously, efficiently and economically throughout a distribution system is a basic requirement if a utility is to render reliable service to its customers and if that utility is to operate profitably.

While gas dispatching has long been one of the operations in distributing utilities, it has become a major operation since natural gas deliveries from transmission lines changed the previous pattern of utility operations. The relative simplicity of gas dispatching, when most utilities were delivering manufactured gas, has been displaced by complexities growing out of gas supplies originating from more than one of these sources: natural gas pipelines, underground storage areas, generating plants and storage holders, and the bulk storage of liquefied petroleum gas.

Early dispatching methods, which entailed little more than maintaining system pressures, are regarded as crude in light of the developments that have advanced hand-in-hand with the gas industry's growth and its need for improved operating techniques. Those developments have made it possible to dispatch gas under the more-complex situations with a high degree of reliability and confidence.

Modern utility dispatching of gas is an exact operation that is conducted with reliable advance information, appropriate advance planning, operational coordination, precise knowledge of operating conditions throughout the system and, in a growing number of instances, the availability of facilities and gas supplies that will meet emergency or unforeseen conditions.

In the chapter on *Pipeline and Network Gas Dispatching*, the principal duty of the dispatching organization was described as coordinating pipeline operations so that gas will be delivered from the points of receipt to the pipeline-customers. In essence, that is the duty of the dispatching organization in a utility, but the specific factors of consideration in a utility differ somewhat in character from those in a pipeline.

One of the important differences is that utility dispatching must reflect an awareness, constantly, of the different types of customers to which gas deliveries are made. The conditions of service, the gas volumes and the delivery pressures may have wide variations. It is the dispatcher's job to operate the distributing system in conformance with those and other considerations.

Intermediate and low pressures

Gas distributing systems usually are made up of intermediate and low pressure components. The intermediate pressures are in the range of 3-to-25 psi and most such systems operate at pressures of 5-to-15 psi. The low pressure systems are usually set at 6″-to-7″ wc.

In the accompanying Figure 1, a representative gas distribution system, only the intermediate pressure component is shown, for simplicity in presentation. The low pressure components radiate in grids from each of the district regulators, indicated by the lighter arrows.

With those pressures, a distributing utility can deliver gas to practically all its classes of customers in accordance

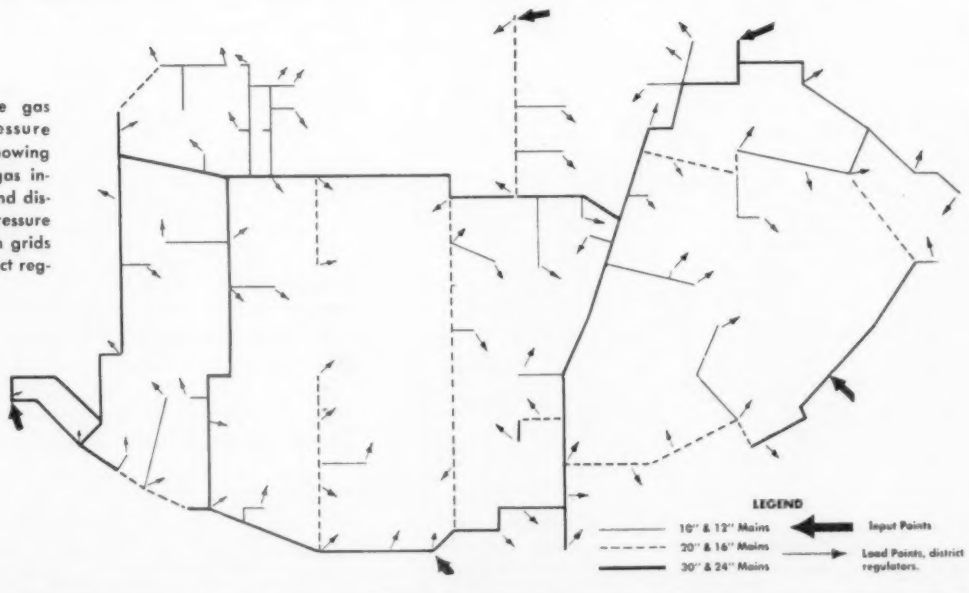

Figure 1. Representative gas utility intermediate-pressure distribution system, showing various sizes of mains, gas input points, load points and district regulators. Low pressure gas is distributed through grids emanating from the district regulators.

with the operating characteristics of the customers' combustion equipment. Of course, an exception is the large industrial user who requires volumes and pressures that exceed the more-typical system designs. Those customers are supplied by special facilities that may be operated independently of the intermediate and low pressure facilities, but nevertheless are a consideration in the overall problem of dispatching the utility's gas.

Basic to the dispatcher's work is a fully-informative map of the utility distributing system. It includes quick-reading details that give such vital data as the location of the intermediate and low pressure facilities; the sources or inputs of gas and the types of gas available at those points; pipeline sizes; location of all valves and regulators; designation of customer classifications, as residential, commercial and industrial; designation of the interruptible industrial customers; and locations of the gas company's plants, shops, depots and emergency stations. Other indications on the map include rivers, railroads and municipal lines.

Dispatching organization

While the size of the dispatching organization of a utility depends upon individual company considerations, it is made up of whatever number of dispatchers is required to operate the distribution system on the basis of 24 hours per day, 7 days per week and 365 days per year.

The personal characteristics of dispatching employees in a gas utility follow those that were presented fully in the earlier chapter on *Pipeline and Network Gas Dispatching*.

The gas dispatching group is a vital part of either the production or distribution department. The production or distribution superintendent has the top responsibility for the functions of this dispatching group. It is his judgement of the system operation, to make it conform with the current demand situation, that the dispatchers must translate into specific use of the facilities. That use of facilities, as stated in the opening paragraph, must bring into balance the dual considerations of reliable service to customers and economic utility operations.

Due to the wide variations which exist, from one utility to another, no single delineation of a dispatching organization would be applicable to all companies. One form of organization will serve as broadly representative:

Superintendent. He is generally responsible for the operation and maintenance of the established production and distribution facilities; for changes in design of those facilities to meet the growth of the territory; and for the growth of business through expansion of distribution facilities into new territory. Also, he is responsible for receiving and recording gas supply curtailment orders from the transmission pipeline; determining when to operate gas generating or liquefied petroleum vaporization plants; determining the classes and extent of curtailment of service to interruptible industrial customers; preparing gas statements for delivery to the customers' billing section; the accuracy of metering and recording of purchased gas, and of gas produced by the utility itself. Also, he is responsible for the accuracy of metering and recording the gas sendout. He supervises the chief dispatcher directly, and all other personnel in the dispatching section indirectly. With respect

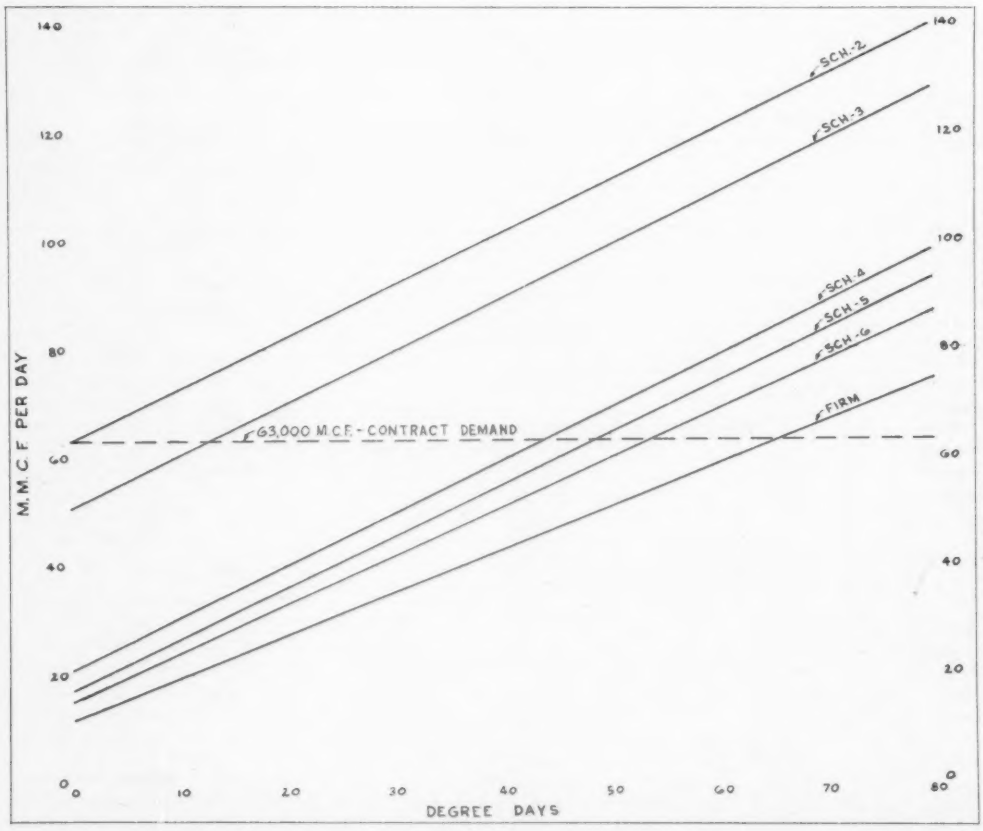

Figure 2. Representative chart used by dispatchers in estimating the daily demand for various customer classifications, based upon degree-days. "Sch.-2" through "Sch.-6" are different classes of interruptible customers. The dashed horizontal line represents the maximum daily volume of gas that is available from the natural gas pipeline. All gas demanded in excess of that volume will be produced and supplied most economically from the utility's generating plant or liquefied petroleum storage.

to dispatching operations, he cooperates with and informs the sales, service, distribution and communications departments. In addition, he may have responsibilities such as maintenance, repair and testing of meters, valves and regulators related to industrial customers.

Chief dispatcher. Under the supervisor, the chief dispatcher has the immediate responsibility for the work of the assistant dispatchers and clerks concerned with dispatching records and files. Also, he gives the necessary operational orders that are based upon decisions given to him by the superintendent of gas operations.

It will be seen, then, that the gas dispatching section of a utility might well, for economic and operational reasons, have to cross functional lines for coordination, cooperation that will bring about continuously efficient and economic operations.

Basic dispatching data

However, the principal duty of the dispatching group is always to make sure that every available cubic foot of gas is made available to the utility's customers, in the order of customer-classification priority and at the lowest possible cost of gas—to the utility and, in turn, to the customer.

The dispatcher must have certain information in order to get this job done:

1. The historical customer-demand data necessary to estimate the immediate- and near-future demand,
2. Continuous weather forecasts and data,
3. The volume of gas that the supplying pipeline will have available,
4. The volume of gas that is available from the utility's gas storage,
5. The volume of peak-shaving gas that is available,
6. The authority to issue gas curtailment orders to interruptible industrial customers, as well as to the distribution department and the gas production plant,
7. The constantly-current sendout figures against which he can verify his estimates of the demand.

The data necessary to make a reasonable estimate of demand includes the historical record of daily demand volume for each class of customer service for all weather conditions, the percentage relationship of the sendout during various periods to the total daily sendout, and the complete weather forecast.

With the weather forecast, the dispatcher estimates the mean temperature for the following 24-hour period and then, using a sendout-per-degree-day chart, he can estimate the total sendout.

A representative chart, prepared for the use of dispatchers in a particular gas utility, is shown in Figure 2. The relationships of the several customer classifications, interruptible and firm, are indicated.

That estimate is the basis for either curtailing, shutting off, or maintaining full deliveries of gas to interruptible industrial customers. Also, if the anticipated temperature is such that the pipeline delivery of natural gas is not sufficient to take care of the firm load, appropriate decisions about operation of gas generating and liquefied petroleum gas facilities are reached and communicated to the dispatching group.

Regularly, as the day proceeds, the dispatcher checks the actual sendout against his earlier estimate.

The estimating, planning and official decisions before him, the dispatcher is then in position to operate the system.

Operation of distribution system

Again taking note of company variations, but using broadly applicable principles, he proceeds to operate the intermediate pressure system at the lowest possible pressure that will assure continuously adequate deliveries to the low pressure system. Generally, all deliveries to residential customers are made from the low pressure system.

This balance of intermediate and low pressure systems is maintained by taking gas from the natural gas pipeline input and, as required, supplementing it with generated gas or liquefied petroleum gas. In the case of pipeline natural gas, the dispatcher must take precautions against exceeding the maximum volume of gas that is provided in the supply contract between the pipeline company and the utility. Takes of pipeline gas in excess of that stipulated maximum volume are charged to the utility at rates that are so much higher than the basic rate that they are un-

DAY	TIME	ATMOSPHERIC TEMPERATURE °F	CUMULATIVE PERCENTAGE OF SENDOUT
Sun.	8 AM	9	
	12 N	9	20.7
	4 PM	13	39.3
	8 PM	8	57.4
	12 M	4	72.2
	4 AM	6	85.5
	8 AM	8	100.0
Mon.	12 N	12	21.6
	4 PM	12	42.7
	8 PM	9	61.1
	12 M	6	74.1
	4 AM	5	85.0
	8 AM	6	100.0
Tue.	12 N	9	20.2
	4 PM	11	39.6
	8 PM	8	57.6
	12 M	2	72.4
	4 AM	—4	85.4
	8 AM	—7	100.0
Wed.	12 N	3	21.0
	4 PM	3	38.8
	8 PM	—6	55.8
	12 M	—10	70.7
	4 AM	—13	84.8
	8 AM	—13	100.0
Thu.	12 N	—4	18.7
	4 PM	3	33.8
	8 PM	2	50.5
	12 M	—3	66.4
	4 AM	—4	81.2
	8 AM	0	100.0
Fri.	12 N	12	20.4
	4 PM	26	37.5
	8 PM	24	53.9
	12 M	21	67.8
	4 AM	19	82.1
	8 AM	22	100.0
Sat.	12 N	32	20.9
	4 PM	45	37.6
	8 PM	39	53.6
	12 M	30	69.2
	4 AM	16	82.4
	8 AM	9	100.0

Figure 3. Table showing atmospheric temperatures and cumulative percentages of the total daily sendouts for 4-hour periods. These percentages were computed at the end of each 24-hour period.

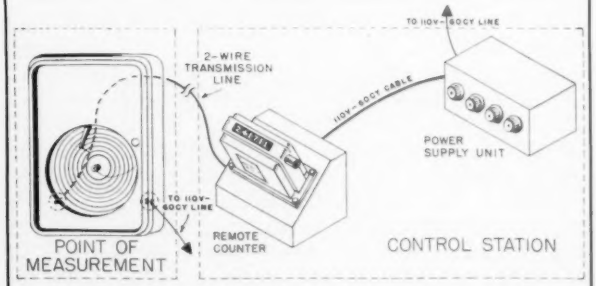

Figure 4. Physical layout for a remote counting integrating orifice meter. The meter is located at the city gate station where the utility takes delivery of natural gas from a pipeline; readings are transmitted automatically by telephone line to the counter in the utility dispatcher's office.

economic; some form of peak-shaving gas is used then, as the more economic consideration.

The mechanics of operating a modern distributing system are now largely by remote control. Telemetering enables the dispatcher to ascertain, without leaving his desk, the flow and pressure conditions at important distant points. Similarly, he can actuate distant equipment to change those conditions to conform with then-existing requirements. These remote meter and gauge readings and remote operations can be selective so that changes can be made for specific areas.

An illustration of remote telemetering is given in Figure 4. This represents the unattended and automatic method by which the dispatcher knows, at all times, the natural gas take from the supplying pipeline to the utility. The readings of the integrating transmitting orifice meter are transmitted automatically by telephone from the city gate station, where the pipeline gas is delivered, to the dispatcher's office.

In addition, the dispatcher has direct radio or telephone communication with truck crews and with plant facilities. Changes in operation of manually-operated valves and regulators can be requested for immediate action at the desired locations.

Dispatcher controls gas and equipment

With his specific knowledge of the relationship of space heating, domestic, commercial and industrial demands in the various areas of the distribution system, and the relationships of those demands to changes in weather, the dispatcher has sources of gas and the operating equipment that enables him to be ready to meet an increasing demand as the temperature drops. As the temperature rises, for all practical purposes he reverses his procedure to decrease flow, stop drawing generated or liquefied petroleum gas and then lower the take from the natural gas pipeline. But, for emphasis, he maintains the best-possible balance in supplying gas to customers with favorable operating economics for the gas company.

During emergencies, whatever the cause, the dispatcher's office is the nerve center that strives to maintain or reestablish service. Emergencies are usually the result of line breaks, gas shortage or equipment failure. The dispatcher takes over the situation and handles it until higher company authority determines the procedure to be followed until the emergency can be cleared. It is the dispatcher's job to put that procedure into action.

This chapter on Gas Dispatching in Distributing Utilities was prepared by Mervyn K. Wrench, general superintendent, gas operation, Metropolitan Utilities District, Omaha.

Legal Considerations of Various Gas Company Employment Contracts

by Leo T. Parker
Attorney at Law
Cincinnati, Ohio

OVER a period of several years many inquiries regarding the validity of various kinds of employment contracts have been sent in by officials and employees of gas companies. One unusual letter from an official of a large gas company was received recently and the writer of the letter wants to know whether or not a contract is valid which restricts an employee from taking employment with a competitor. He feels that in many instances "green" employees are employed in different departments of a company and after considerable effort and expense, on the part of the company, these employees become experienced, valuable workers, whereupon they resign and go to the employ of a competitor. This official thinks that employees who are trained by his company should not be permitted to serve competitors and has asked that he be supplied with a suitable clause for insertion in the company's employment contracts to protect the company in this respect.

First, it is important to know that a contract between an employer and employee, wherein the latter agrees not to enter into a competing business, or engage himself with a competing firm, is valid and enforceable provided the restrictions are reasonable.

For instance, in the case of Eigelbach v. Boone 287 S. W. 225, it was disclosed that a contract existed between an employee and his employer which contained the clause:

"I further agree that, in the event my employment is terminated for any reason, I will not injure or attempt to injure your business or the business of your clients or associated interests by communicating with or otherwise getting in touch with your customers, directly or indirectly, in any way, form, or manner; but, on the other hand, by my conduct and action, I will at all times do all I can to make friends for you. I further agree that, in the event of termination of my employment for any reason, I will not engage in the same or similar line of business in the same city, or county, either for myself or another person, firm, or corporation, for the period of one year immediately following the termination of my employment by you."

Injunction against ex-employee

Soon after the employee terminated his employment he became engaged in a competitive business. In subsequent litigation the court promptly granted an injunction against the ex-employee.

On the other hand, it is important to know that a contract obligating an employee not to enter into a competitive business, or hire himself to a competitor, must not contain unreasonable stipulations. If the terms of the agreement are unreasonable, severe and unnecessary to give the employer adequate protection, the contract may be held invalid and unenforceable. See White, 278 S. W. 470.

The unreasonable provisions, likely to result in a contract of this nature being held invalid, may relate to the size of the territory in which the employee agrees not to engage in competing business, or to the period of time over which he is bound to not take competitive employment.

Under no circumstances should the contract specify territory of greater area than is actually required to adequately protect the employer. And the period of time for which the employee is bound by the contract should be not more than one to two years.

In another case, (Smith, 6 Atl. 2510) an employee agreed not to enter into competing business "in the county or elsewhere". With respect to the "elsewhere" provision in the contract a higher court held the contract invalid.

In another litigation, Diamond v. Roeber, 13 N.Y. 419, a contract was held void which specified that the employee agreed not to "at any time within 99 years" enter into a competing business or become engaged with a competing firm "in any of the States or territories of the United States". In this instance, the court held both the duration and the extent of the territory unreasonable and unnecessary to the employer's adequate protection, and hence the contract was held to be unenforceable.

All higher courts hold that although no contract exists between a gas company and an employee, the court will grant an injunction to prevent an ex-employee from using confidential information acquired while employed by the gas company. Such "confidential" information includes lists of prospects; knowledge of installations; secret inventions; processes, etc.

Law of officials and partners

According to a late court decision either an official, partner or business seller is obligated by a contract in the terms of which he agrees not to enter into competitive business in a specified area at anytime in the future.

For illustration, in Scott v. McReynolds, 255 S. W. (2d) 401, the testimony showed as follows: previous to October 31, 1949 G. T. Scott, Jr. and J. C. McReynolds, Jr. were engaged in business as partners under the name of the Nashville Butane Gas Co. On this date they signed a partnership dissolution contract which contained this clause:

"J. C. McReynolds, Jr., agrees that he will not hereafter engage in the retail business of selling Butane-Propane gas, or appliances for such gas, within a 50 mile radius of Nashville, nor will he work for anyone in a retail capacity engaged in such a business, except that he may enter such business in Springfield, and work in all directions except toward Nashville."

On July 30, Scott filed suit against McReynolds and the Carden-McReynolds Gas Co., Inc., of Springfield, in which it was alleged that both are violating the terms of the contract signed by McReynolds on October 31, 1949. Further testimony showed that McReynolds, Jr. was one of the prime movers in the organization of the Carden-McReynolds company, is the president of this company, and is one of the principal stockholders. This company is actively engaged in the business of selling, at retail, Butane-Propane gas and appliances in connection with the use of such gas, which is the same kind of business in which Scott is engaged.

The higher court considered all testimony and held that a contract is valid which binds the seller not to engage in the same business in competition with the purchaser. This court held that while such contracts are designed to prevent competition on the part of the seller, it is ordinarily neither their purpose nor effect to stifle competition generally in the locality. The business in the hands of the purchaser is carried on just as it was in the hands of the seller, and therefor, the court granted an injunction prohibiting McReynolds from continuing in the competitive business. The court said:

"The Federal anti-trust laws do not invalidate such contracts although trade and commerce among the states may be restrained thereby. The court is of the opinion that said contract is not void and invalid for any of the reasons assigned by the defendant McReynolds in his answer to the complainant's (Scott's) bill, and holds that said contract, with

(Continued on page 37)

FEDERAL POWER COMMISSION

Olin Interstate Corp to Acquire Facilities of Interstate Natural Gas

The Commission has authorized Olin Interstate Corp., N. Y., to acquire by merger and operate all of the pipeline facilities of Interstate Natural Gas Co.

The authorization, however, is conditioned to require Olin Interstate to record acquisition of the company at net original cost, and to prevent Olin Interstate's assumption of a $32 million debt incurred by it and its first parent, Olin Industries, Inc., in acquiring Interstate Natural's stock.

Interstate Natural's pipeline system, in Louisiana and Mississippi, will continue to be used and operated in the same manner as in the past. Upon completion of the merger, Olin Interstate's name will be changed to Olin Gas Transmission Corp.

Olin Interstate now owns over 99½% of Interstate Natural's stock, acquired at a cost of about $40 million. Olin Interstate was organized in June of 1953 as a corporate offspring of Olin Industries. However, it is now a wholly-owned subsidiary of another subsidiary organized by Olin Industries in November of 1953, Olin Oil & Gas Corp.

Olin Industries financed the acquisition of Interstate Natural's stock largely by causing Olin Interstate to issue and sell $32 million in 4½% notes, due July 1, 1955, to Prudential Insurance Company of America. Olin Interstate and Olin Oil subsequently entered into an agreement with Prudential whereby the notes would be exchanged for 18-year 4½% notes of Olin Interstate of the same principal amount, secured by a mortgage on fixed assets and guaranteed by Olin Oil.

Olin Interstate also proposed to record the Interstate Natural properties upon its books at the original cost, of about $16 million, including construction work in progress. In addition, there was to be recorded an acquisition adjustment of approximately $24.6 million, representing the difference between the cost to Olin Interstate of the Interstate Natural stock and net original cost of interstate's plant.

The Commission said that in these circumstances the granting of a certificate conditioned to prohibit the recording of any acquisition adjustment is "reasonable and required." However, FPC pointed out that this would result in Olin Interstate's recording upon its books at net original cost the properties acquired from Interstate Natural, approximating $16 million, and would necessitate Olin Interstate assuming long-term mortgage debt of about $32 million. Upon this basis, FPC declared, Olin Interstate's balance sheet would then reflect an impairment of capital amounting to many millions of dollars, with the resulting capital structure reflecting an unsound financial condition.

Considers Automatic Escalation and Favored Nation Clauses in Contracts

The Commission has announced that it has under consideration the desirability of adopting rules concerning automatic escalation and favored nation clauses in gas purchase contracts by interstate natural gas companies with producing companies.

Interested persons have until July 30 to submit views and comments, and the Commission will hear oral argument on the matter next September 9.

In a notice of proposed rule making, the Commission said that some of the natural gas transported in interstate commerce is purchased under contracts with producing and gathering companies, providing for automatic increases or escalation in charges paid by the interstate pipeline companies whenever they are permitted to increase their wholesale rates, or whenever certain index figures are raised. Similar provisions, termed "favored nation" clauses, call for an increase in the price paid to a producer by the interstate transporter if it or any other producer in the same field or other defined area of production receives higher prices from the same transporter or another transporter, or if a bona fide offer to purchase gas has been made to a producer within the defined area.

The Commission declared that information should be secured bearing upon whether any of these, or similar, contract provisions have any reasonable relation to the economics of producing, gathering, or transporting natural gas, and whether rules dealing therewith should be adopted. At the same time, FPC pointed out, it is recognized that Congress has provided that the Natural Gas Act shall not apply to the production or gathering of natural gas.

Declaring that while it is generally desirable for the protection of consumers that the interstate companies' gas purchase contracts cover periods of maximum duration the Commission said that nevertheless "contract provisions which are not in the public interest should not be approved or given formal recognition merely for the purpose of extending the reserve contract period."

The Commission said that it is considering the desirability of adopting rules within the terms of the Natural Gas Act, either in connection with the issuance of certificates whereby contracts with these features would be declared not to be acceptable as evidence of gas supply, or in connection with rate making whereby increased payments made under escalator provisions but having no relation to additional or improved service or gas supplies could be disallowed, "or in some other connection whereby effective action can be taken in the premises pursuant to the terms of the Act."

$22½ Million in Proposed Rate Increases Filed by 6 Companies

A total of nearly $22½ million in proposed wholesale natural gas rate increases has been filed with FPC by six pipeline companies, all of which have had other increases made effective in the past few months.

The largest of the newly-proposed increases is by Tennessee Gas Transmission Co., which filed a $13,600,000, or 10.3% annual increase, to become effective June 1. Four customer companies, who, in turn, filed increases intended primarily to pass along Tennessee's increase, are: Hope Natural Gas Co., Tennessee Natural Gas Lines, Inc., Alabama-Tennessee Natural Gas Co., and East Tennessee Natural Gas Co.

The sixth filing, which is not related to Tennessee's application, was by Transcontinental Gas Pipe Line Corp., which is proposing a $5,658,000, or 9.2% annual rate increase.

Texas Eastern Subsidiary to Build Pipeline for Transcon Storage

The Commission has issued a certificate to Texas Eastern Penn-Jersey Transmission Corp., a newly-formed subsidiary of Texas Eastern Transmission Corp., authorizing it to construct a 265-mile 24-inch natural gas transmission line in Pennsylvania and New Jersey for lease to the parent company.

The Commission concurrently issued a certificate to Texas Eastern authorizing it to operate the new line, to perform a storage service for Transcontinental Gas Pipe Line Corp. and to increase maximum daily deliveries to certain customers of Texas Eastern. Transcontinental, in turn, was authorized to increase maximum daily deliveries to seven of its customers under the storage arrangement with Texas Eastern.

Texas Eastern Penn-Jersey's proposed line, estimated to cost $30,755,200, will extend from the Oakford storage field in Westmoreland County, Pa., to a connection with Texas Eastern's system near Lambertville, N. J.

Texas Eastern, which will not construct any new facilities, will loan up to 136,174 Mcf of gas per day to Transcontinental during the period from November 16 through April 15 each year, and will receive back from Transcontinental during the other months of the year a quantity of gas equal to that loaned. The storage contract period is for 20 years.

Texas Eastern also was authorized to increase peak day deliveries to Philadelphia Gas Works Div., United Gas Improvement Co., from 83,642 Mcf to 133,072 Mcf. Texas Eastern also will increase deliveries to The Manufacturers Light and Heat Co., Pittsburgh, and The Ohio Fuel Gas Co., both Columbia Gas System subsidiaries, in Texas Eastern's rate zone D in eastern Pennsylvania. Texas Eastern's total delivery obligations to the Columbia companies and to United Gas Improvement Co. will not be increased, however.

Transcontinental's certificate authorizes it to increase its presently authorized maximum daily delivery volumes to seven customers by utilizing the gas to be loaned by Texas Eastern. The annual volumes of gas which Transcontinental is obligated to deliver to each of the customers remains unchanged. The storage gas will be delivered by Texas Eastern either into Transcontinental's pipeline system at one or more of three interconnecting points or through Texas Eastern's own metering stations, for Transcontinental's account, to customers which are common to both companies. Transcontinental will build connecting facilities with Texas Eastern at two locations, at an estimated cost of $131,628.

News of the Gas Industry

Conclude Pacific Northwest Hearings

Pacific Northwest Pipeline Corp. and Westcoast Transmission Co., Inc., recently requested Federal Power Commission to omit the intermediate decision procedure in the consolidated proceedings involving several proposals for natural gas service to the Pacific Northwest. Following receipt of the request, FPC ordered the intermediate decision procedure omitted and has scheduled oral argument to be held June 1. The action means that the case will be decided directly by the commission.

The final session of the hearing was held on March 31, after nearly 200 days of hearings, in which more than 28,000 pages of testimony were accumulated.

Peabody Is Indiana Gas Assoc Pres

E. G. Peabody, executive engineer, Citizens Gas and Coke Utility, Indianapolis, was elected president of Indiana Gas Association at its 44th annual convention April 22-23 at French Lick, Ind. A. B. Brown, president, Southern Indiana Gas and Electric Co., Evansville, was elected to the vice presidency—a post which by custom leads to the presidency the following year. Victor C. Seiter, controller of Citizens Gas, was re-elected secretary-treasurer.

Mr. Peabody, right, presents a plaque to James C. Sackman, sales manager of Northern Indiana Public Service Co., Hammond, the retiring president.

FPC Issues Hinshaw Exemption Rule

Federal Power Commission has announced issuance of a proposed rule outlining procedure for making effective exemptions from FPC jurisdiction of companies qualifying for such exemption under the provisions of the Hinshaw bill recently approved by the President.

In a statement issued in explanation of the proposed rule, Chairman Kuykendall said: "Under this (Hinshaw) amendment a new subsection (C) is added to Section 1 of the Natural Gas Act. The new subsection provides that any company which purchases natural gas at or within a state boundary is exempted from the provisions of the Act if all of the gas so purchased is consumed within that state and the rates, service and facilities are regulated by a state commission.

"The Commission is requiring a minimum of information in order to make these exemptions effective. Since no exemptions can be allowed unless the appropriate state commission certifies that it has jurisdiction which it is exercising over the rates, service and facilities of the applicant company, the Commission is requiring each company applying for the exemption to submit the minimum amount of information which will enable the state commissions to make the necessary examination and to file the certificates when appropriate. By assisting state commissions in this manner, uniformity will be obtained and the work of the state commissions reduced to bare minimum."

More than 1,000 persons from 36 states, Mexico and Canada attended the 29th annual Southwestern Gas Measurement Short Course held at the University of Oklahoma, during April. Above, the chairman of the general committee, Pat H. Miller, left, thanks W. E. Caine for his participation in the course, while Dean W. H. Carson, chairman, executive committee, looks on. Ninety-one classes were conducted, some on a panel basis, by instructors from industry, equipment manufacturers, and members of the University Faculty. On the last day of the course, Mr. Miller stepped down as general chairman when he handed the gavel to the newly elected general chairman, K. R. Tibbets, of Warren Petroleum Corp. The following persons were appointed by the executive committee as chairmen of the subcommittees indicated: R. O. Cox, Lone Star Gas Co., program; R. F. Nowlin, United Gas Corp., publications; G. H. Schmitt, Jr., New Orleans Public Service, practical methods; R. B. Fleske, Cities Service Gas Co., exhibits; Miss Kate A. Niblack, Oklahoma Utilities Association, registration and publicity; W. H. Carson, University of Oklahoma, local arrangements. Cash prizes were awarded to winners of the annual essay contest on What I Learned at the Gas Measurement Short Course. Robert L. Hood, Texas Eastern Transmission Corp., won first prize. The second prize went to Ray Penrod, Texas Gas Transmission Co., and Garner Price, City Gas Department, Decatur, Ala., was third prize winner.

So Counties Installs 100,000th Meter

Commemorating 38 years growth in the communities of the Santa Monica Bay, Cal., Southern Counties Gas Co. recently installed the 100,000th gas meter in the area.

Celebrating the event in the development of the Bay area, at a reception scheduled for the site of the installation, were representatives from industry, press, government and service groups throughout the region. Chosen as the location of the "golden meter" installation was "Sunset Country-house-Brentwood," lavish all-gas model home showplace. The house has been opened for public inspection.

Oliver C. Klinger

Oliver C. Klinger, president of Oildom Publishing Company, Bayonne, N. J., which he founded in 1908, died on April 23. He was 70 years old.

Mr. Klinger, who worked as a telegrapher for Standard Oil Company of New Jersey 50 years ago, began in the publishing business with one magazine. At the time of his death his publications included: *The Oildom Daily; The Oil Marketer; Fuel Oil News; Pipe Line News,* and *The Pipeliner.*

Mr. Klinger was secretary-treasurer of The Pipeliners Club and a member of the Twenty-five Year Club of American Petroleum Institute.

Harold J. Reekie

Harold J. Reekie, vice president and general manager, United Cities Utilities Company, Chicago, died on April 17, at 41 years of age.

Mr. Reekie was employed by United Cities in 1936 as district manager of Central Wisconsin Gas Company, a subsidiary company, and in 1948 was transferred to the executive offices of United Cities, Chicago, to fill the position of general manager. Mr. Reekie also was vice president and treasurer of Metrogas, Inc., an affiliated company.

61 Bklyn Boro Gas Men Win Awards

Sixty-one of the regular drivers carrying out services of the Brooklyn Borough Gas Co., N. Y., have achieved the National Safety Council safe driver award for operating a commercial vehicle without having a preventable accident in the past 12 months.

In announcing receipt of the award certificates Karl B. Weber, vice-president and chief engineer of the company, termed it a noteworthy record since the drivers represent 90% of all regular drivers of company vehicles. Company automobiles driven by customers' service men, supervisors, distribution men and the emergency crew cover a combined total of 500,000 miles annually in maintaining service for more than 100,000 customers.

Robertshaw-Fulton Opens New Plant

Robertshaw-Fulton Controls Co. is expanding production facilities with the opening of a new plant at Indiana, Pa. The company has taken a five year lease on the $475,000 plant, constructed for the manufacture of certain new products now being readied for the market, according to company president John A. Robertshaw.

W. D. Miller, assistant vice president of Robertshaw-Fulton and general manager of the Robertshaw Thermostat Div. at Youngwood, will be in charge of the new plant. The one story, 70,000 square feet building is situated on 20 acres of land, providing adequate room for expansion.

AMERICAN METER PROPOSES NEW INDUSTRY-SUPPORT PROGRAM

After gratifying reactions to the first promotion of gas to the appliance-buying public by a company that has nothing to sell to that group, American Meter Co. has now proposed to other companies that supply materials and equipment to the gas industry that they consider and participate in a cooperative plan for the promotion of gas in the overall and long-range industry interest.

The 2-color ads that have appeared in *Saturday Evening Post* and *Life* over American Meter's name were regarded, frankly, as relatively meager efforts by William G. Hamilton, Jr., president, in his letters to presidents of other manufacturing companies who supply the gas industry. His comparison, of course, was related to "the concerted programs of the electric industry." Strengthening of that effort, through the cooperation of all companies in the supplier category, was Mr. Hamilton's objective.

In an accompanying brochure, American Meter high-spots the gas industry situation and indicates the congratulatory and appreciative reactions that followed the appearance of their mass-circulation advertising.

The plan for broadening the base of this industry-conscious promotion, proposed in the brochure, is simple in-the-extreme: (1) Each company interested in participating will appoint a representative to a steering committee; (2) the steering committee will elect a permanent committee to coordinate the cooperative advertising program; (3) advertising will be placed in consumer-publications on the basis of a minimum of 3 ads yearly, either through the advertising agencies of the participating companies or with the help of the coordinating committee.

Visualizations of several consumer ads that might be appropriate for use in this plan are included in the brochure, with each one using the theme, "When you build, buy or remodel, be sure your home is modern—with GAS." American Meter has featured that theme in its ads. The ads provide for single or multiple company signatures.

Suggestions are being sought from gas company presidents by Mr. Hamilton in letters that give the background of his company's consumer advertising and include copies of the brochure directed to the manufacturing companies.

In recognition of the urgency for early consideration of his proposal, Mr. Hamilton concluded his letter to manufacturing companies with the request that they communicate with him, "as we expect to proceed to take definite steps to consummate the plan."

Elect 4 Genl Amer Trans Co Execs

A new position—vice chairman of the board—was created and a new president was elected recently at the board meeting following the annual stockholders' meeting of General American Transportation Corporation. Appointment of three new vice presidents and a new assistant to the president also was approved.

William J. Stebler

Sam Laud, who has been with the company for 38 years and president since 1945, became vice chairman. William J. Stebler, formerly executive vice president, becomes the new president. Mr. Stebler, who served for eight years as vice president in charge of manufacturing prior to his promotion to executive vice president in 1951, has been with the company since 1928.

Sprague Meter Adds 2 Sales Engrs

Sprague Meter Co. has announced the addition of two new sales engineers to augment the coverage of the United States and Canada. The men are Christopher Sproul and Paul Schneider.

Christopher Sproul

Paul Schneider

Mr. Sproul, formerly a representative of International Business Machines, will cover part of the Northeast division and Eastern Canada. Mr. Schneider, a former member of Northern Illinois Public Service Commission, will cover the Northwest division and Western Canada. Both men have extensive experience in selling and have completed a broad training period in the production and engineering departments of Sprague Meter Co.

Name 5 Judges in Rockwell Contest

Five gas and electric utility company executives have been chosen as judges in a $5,000 essay contest being sponsored by Rockwell Manufacturing Co. for persons employed in the gas industry, Gilbert T. Bowman, general products manager of Rockwell's Meter and Valve Div., has announced.

The five are: D. A. Hulcy, president, The Lone Star Gas Co.; F. A. Lydecker, vice-president of gas operations, Public Service Electric and Gas Co., Newark, N. J.; H. L. Masser, executive vice-president, Southern California Gas Co.; William G. Rogers, president, The East Ohio Gas Co., Cleveland; H. Carl Wolf, managing director, American Gas Association.

The nation-wide contest, which is on the general subject of planned meter retirement programs in the industry, provides prizes totaling more than $5,000 worth of Delta power tools to winners in two categories.

Dresser Industries Buys Tulsa Site

The signing of a purchase agreement with Industrial Sites, Inc., of Tulsa, Okla., covering approximately 15 acres of land in the New Sheridan industrial district, of Tulsa, provides for further expansion by Dresser Industries, Inc., Dallas, in the Tulsa area. Consummation of the agreement and the start of a long-range program involving an ultimate capital expenditure of more than a million dollars has been jointly announced by J. B. O'Connor, executive vice president of Dresser Industries, and Ray H. and Robert M. Siegfried, owners of Industrial Sites.

The new Dresser site was located with the aid and cooperation of Harold Wright, vice president of the Industrial department, National Bank of Tulsa, and a number of Dresser officials. The purchase agreement was entered into following recent approval of the zoning of this property for industrial use by the Metropolitan Planning Commission of Tulsa County.

While final plans will be developed to fit the Dresser companies' eventual needs, the immediate program calls for the construction of a modern brick office building and a warehouse building. Construction of this initial building is to start as soon as plans are approved.

Bridgeport Gas Light Names Pres

The Bridgeport Gas Light Co. has announced the election of Ronald A. Malony as president. Mr. Malony succeeds George S. Hawley, who has been named chairman of the board and the executive committee.

Lack of Coordination in Gas Industry Seen as Weakness

(Continued from page 18)

teristics of our business is felt in many ways, but I am concerned primarily with its effect on the promotion work that is so sorely needed. The nearness to the point of sale of gas seems to greatly influence the readiness of the various branches of the industry to realize the need of promotion programs. The distribution companies as a group have recognized the need for some time and have been carrying on some campaigns of varying degrees of effectiveness.

"The transmission group, being further away from the ultimate consumer, has only within the last 18 months taken any concerted action.

"The producing group, having no contact at all with the ultimate consumer, up to the present time has utterly ignored any suggestion that it too should be concerned with the promotion of the industry from which it receives its money.

"The reason for this producer attitude is not hard to see. First, the greater part of the natural gas sold is produced by oil companies, as an incidental result of their search for oil. Their primary business is that of producing and marketing oil and their chief interest in gas is to get rid of it. Second, the producer groups that are not a

part of the oil industry are interested only in selling the gas they control. In their opinion all gas that can be found can be sold, so the long range view seems to interest them not at all. Well-head prices of gas have been increasing in recent years and we have a right to expect that as the producer gets more for his gas, he should be willing to contribute something to the promotion of the use of gas. The oil industry, particularly, spends millions annually to promote the use of oil; is there any reason why it should not spend some to increase the use of gas?

"This lack in integration in the gas business has, therefore, curtailed the source of funds for promotional purposes and makes it all the more necessary that what money is available should be spent on a fully coordinated promotional program.

"Now, there is another comparison that can be made which will make clear an additional handicap to our industry's promotional efforts. The larger manufacturers of electric equipment cover the field from power plant to lamp bulbs. Every time an electric appliance is sold it increases the demand for more inside wiring and wiring devices, meters, transformers, pole-line wire and equipment, high tension transmission lines and sub-station equipment and the generators which produce the electric power. The two largest companies in the field are interested in the production of most, if not all, these types of equipment. No wonder that millions of dollars, far more than would be available from the appliance business and the electric utilities alone, are available for advertising the electric way of living, as has been so skillfully done.

"Look at the situation in the gas industry. The manufacturers of *our* production plant—steel casing, drilling equipment and contractors show no interest in our problem. The manufacturers of *our* transmission equipment—pumps and compressors, gas treatment plants, and steep pipelines have contributed nothing to our industry promotion efforts. Nor have the makers of our distribution devices—meters, regulators, steel pipe, etc., joined in any effort to promote the industry.

Virtually as Mr. Griffin addressed the Southern Gas Association Convention, the consumer-advertising of American Meter Co. appeared in "Life"—a gas industry supplier addressing customers and prospects.

"So again, in glaring contrast to the electric industry, we find ourselves under the handicap of the apathy shown toward any gas industry promotion by many of those who have reaped so much from its growth and to whom our industry has brought so much material benefit.

"So here we have our problem—an unintegrated gas industry, losing its acceptance by the consuming public, fighting ineffectively to hold its kitchen load, handicapped by inadequate promotional funds, unsupported by large segments of the industry, and facing a competitor twice its size.

"At this point it might appear that the industry has a high hill to climb, and it has—don't underestimate it. But a defeatest attitude will only speed us down the hill. . . ."

Tough Digging in Close Quarters

IN PORTLAND, MAINE, the soil in many places can be downright troublesome, with large stones and boulders mixed in with smaller stones and gravel, a combination that makes tough digging. Add to this the fact that trench lines in many places run right alongside rows of trees, poles and other obstructions and you've got a really mean job of trenching.

Yet this CLEVELAND Model 95 "Baby Digger" is moving right along on the job—as shown by the discharge from the conveyor—coming through with the same dependable performance that has made it an outstanding favorite for over 30 years.

This is the kind of job where CLEVELAND'S famous multi-speed transmission really pays off, enabling the operator to select the *right* combination of power and speed for the particular job condition from more than 30 available combinations of digging wheel and crawler speeds.

The "Baby Digger's" compactness and maneuverability also played important parts in completing this job right on schedule in spite of numerous obstructions. The large boulders deposited to the left of the trench in the photo show that good use was also made of CLEVELAND'S reversible conveyor on this job.

Write for descriptive bulletins and specifications, or get the full story on CLEVELANDS from your local distributor.

THE CLEVELAND TRENCHER CO.

"Pioneer of the Modern Trencher"

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THE MEN
WHO SELL IT — Another reason why
You can depend on
TAPECOAT®
the Coal Tar
Protection in
Handy Tape Form

The service behind TAPECOAT is as distinctive as this coal tar coating, itself.

To make this service as dependable as the product, the sales engineer who sells the job also services it. This means that you can count on everything he tells you because he is responsible for the job *personally*.

The fact is, TAPECOAT gives you more lasting protection for your money because it is a quality coal tar product, and coal tar is nature's own defense against corrosion.

Specify TAPECOAT for pipe, pipe joints, tanks, and other vulnerable steel surfaces above or below ground. Its performance record since 1941 merits your complete confidence.

TAPECOAT comes in rolls of 2″, 3″, 4″, 6″, 18″ and 24″ widths. It's easy to apply as our sales engineers will demonstrate.

Write for brochure and prices today.

The* TAPECOAT *Company

Originators of Coal Tar Tape Protection

1529 Lyons Street, Evanston, Illinois

Payne Reports on 10-Cities Test To Southern Gas Convention

(Continued from page 19)

Refrigerators

"There is still enough interest in gas refrigeration in some of the cities we are talking about to encourage the gas companies to inform the public of its availability, economy of use, noiseless operation and long-life dependability. A large proportion of those using gas refrigerators evince a tendency to remain with that type of equipment. Very few households with electric refrigerators indicate any preference towards gas, but many of these people in all cities admitted to have no knowledge of gas refrigerators.

"One city shows a 12% gas refrigerator saturation and also 12% insofar as preferences are concerned. Another city had an 8% actual saturation and a 12% preference indication. Still another company had 15% actual and 20% preference.

"In contrast with ranges, those stating a preference for gas refrigerators have more definite reasons than those preferring electric. The major reasons for preference of gas in all of the cities are (1) noiseless operation, (2) economy and (3) general dependability. Those preferring electric state general familiarity and habit as the major reasons—safety is also mentioned in some cities. There seems to be particular confusion among many people as to differences in operating costs between gas and electric.

Water heaters

"Despite the fact that gas water heaters dominate markets in all but one of the cities surveyed, stated preferences indicate future gains for electric water heaters if present attitudes remain. The present electric water heater saturations are exceedingly small, but general glamour and seeming desirability of electricity has led some people to state a preference for electric water heaters. Safety is another factor of consideration for those who prefer electric water heaters. There are also large groups who state no preference.

"Over 90% of all respondents felt that the amount of hot water they had available was adequate, even among those with automatic washers. It is quite possible that many families do not realize, or expect, the quick volume of hot water that can be made available with properly-sized automatic gas water heaters. There certainly seems to be room for consumer education here. . . . The major specific reasons for preference of gas water heaters are economy and speed. That for electric water heaters is safety. There are large numbers of answers that are non-specific. . . . Most of the electric water heaters were bought fairly recently, less than five years old.

Gas dryers

"There is a good potential for dryers in almost all cities surveyed but, if stated sentiments are a criterion, most of the sales made will be electric. The patterns ran fairly similar in each of the six cities. Where reasons for stated preferences were

asked, most people could not give specific answers, or any reason at all. Those preferring gas mentioned economy more than any other specific reason. Confusion as to comparisons in original installation and operating costs are quite apparent."

Advertising and public relations

Some companies involved in the Action Demonstration have found that their advertising has seemingly failed to hit the mark, Mr. Payne told the SGA sales section. Respondents in 2 cities reported that only about 20% remembered seeing any gas company advertising. Nearly 50% of those interviewed in 2 other cities recalled seeing recent advertising of the gas company. One showed particular recollections because of the recent conversion in that city to natural gas. Most, however, could not recall what was specifically advertised. When those interviewed in 2 cities were asked what advertising media they considered best for the gas company to reach them, television was mentioned the greatest number of times, with newspapers a close second.

Electric companies generally seemed to fare slightly better than the gas companies as to the regard of the public.

Surprisingly low numbers of respondents mentioned lower rates when asked for suggestions as to what the gas company could do to further increase its service to the community.

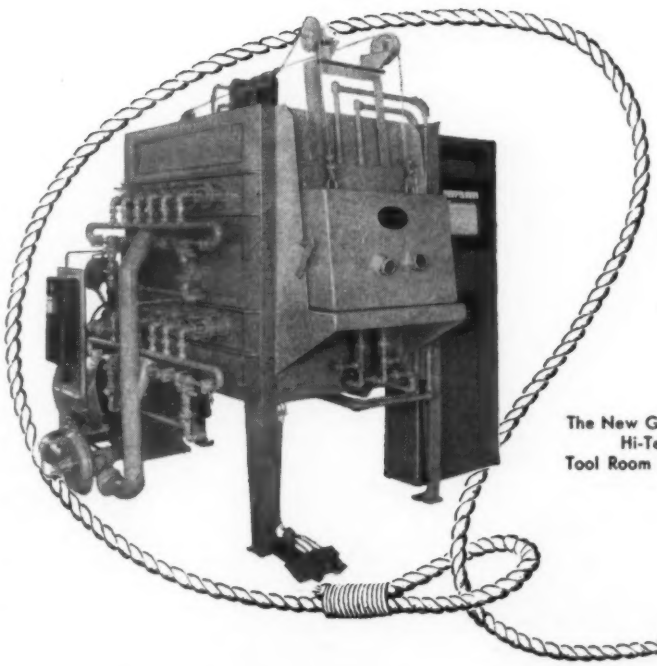
"Coming from one of these ten companies," Mr. Payne emphasized, "I would personally encourage that all . . . companies . . . consider making such factual surveys—not as an end unto themselves, but as the means for properly directed, intensified and corrective efforts.

"The surveys have provided the companies, many for the first time, with factual information. Some of this shows strength; some of it, weakness.

"In either event, they are an important basis for rededicating these companies to create an even-better attitude towards gas among those they serve and to maintain closer cooperation with manufacturers and dealers—as well as builders, architects and contractors. The 15 points of the Gas Industry Development Program are the guide for the implementation of these objectives.

"I dare say that there are many companies within whose service area there are cities where such an intensified program is not only a necessity but a practical method for experimenting with new ideas before incurring the expense and possible risk of applying them immediately to the entire company operations.

"There is nothing magical in the number '10'. The Action Demonstration Program will welcome any other company who wants to join in this effort to keep their industry dynamic and growing."



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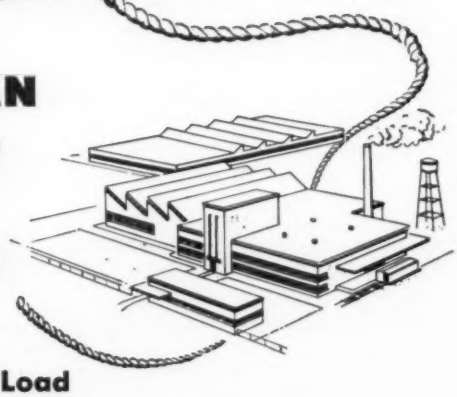

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Rockwell Names Chief Oakland Egr

Terrence H. M. Taylor, former research scientist with the U. S. Atomic Energy Commission, has been named chief engineer of Rockwell Manufacturing Company's Nordstrom Valve Div. plant at Oakland, Cal.

Kraemer at Commonwealth Services

Michael J. Kraemer, former public utilities economist for Lionel D. Edie & Co., Inc., has joined Commonwealth Services Inc., utility and industrial management and engineering consultants.

Mr. Kraemer will act as a general consultant, specializing in financial studies, security analyses and budgetary projections and forecasts. He will make his headquarters at Commonwealth's New York office.

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MEN AT WORK

EDWARD O. ABEL is now manager, product service div., *Milwaukee Gas Specialty Co.*

ROBERT S. BAUMAN was appointed division superintendent, transmission, production and storage, *The Manufacturers Light and Heat Co.*

HERBERT BOSHEA is now purchasing agent, Bridgeport thermostat div., *Robertshaw-Fulton Controls Co.*

LEONARD W. BOWERMAN is now district manager, Eastern div., *Milwaukee Gas Specialty Co.*

JAMES W. BURG is now factory manager, Dallas assembly plant and warehouse, *American Meter Co.*

BRUCE W. CONOVER is now assistant to general superintendent of operations, *South Jersey Gas Co.*

ROBERT J. COPE has been named sales representative, Kentucky, *Mueller Co.*

J. RICHARD COTTRELL has been named accounting supervisor, *Pittsfield Coal Gas Co.*

RAY E. DEWEESE is now sales representative, Tennessee territory, *Mueller Co.*

ROBERT H. GAMBLE is now sales representative, Eastern Michigan, *Mueller Co.*

ARTHUR W. GULLIVER has been appointed application engineer, New York staff, *Dravo Corp.*

HORRALL HARRINGTON is now sales engineer, Midwest district, Chemical Plants div., *Blaw-Knox Co.*

ROBERT B. HERRIN was appointed sales representative, Missouri territory, *Mueller Co.*

JAMES KELLEY has been named general foreman, distribution and production departments, *Pittsfield Coal Gas Co.*

EVERETT A. KELSEY was appointed vice president, sales, *Pittsfield Coal Gas Co.*

HARRY L. MCANALLY has been named land agent, *The Peoples Natural Gas Co.*

ROBERT O'HARA is now sales engineer, Detroit staff, Fielden Instrument div., *Robertshaw-Fulton Controls Co.*

ALDO ORSI has been promoted to purchasing agent and general storekeeper, *Pittsfield Coal Gas Co.*

ROY R. RAFENSTEIN was named district manager, Western div., *Milwaukee Gas Specialty Co.*

G. A. SMITH was named sales representative, Southern Illinois, *Mueller Co.*

RICHARD C. SPONSLER has been made sales representative, *Mueller Co.*

WILLIAM R. STEVENS has been advanced to operating superintendent, *Pittsfield Coal Gas Co.*

FRANCIS X. UHL has been appointed sales representative, Western Pennsylvania, *Mueller Co.*

FRED J. WATT has been named manager, air conditioning and refrigeration div., *Worthington Corp.*

DONALD R. WEIDENFELLER has been named manager, home office sales, *Milwaukee Gas Specialty Co.*

MONTY F. WOODRUFF has been appointed to the staff of *Drake & Townsend, Inc.*

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"SOLVALL" – Liquid Phase Gum
"RUBBER CONDITIONER"
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GAS HOLDERS
Gas Holder Repairs

PURIFIERS
Gas Holder Inspection

Corporate Capital Expenditures Expected to Duplicate 1953 Mark

(Continued from page 21)

been declining may be attributed partly to the conservative appraisal of earnings and dividends during recent years. Earnings now are declining in many instances, but there still exists considerable latitude for leading corporations to maintain dividend payments which have been in effect. In some instances, in fact, the expectation prevails that higher disbursements could well be ordered by directors.

In the face of mixed first quarter 1954 operating results, compared with returns for the similar 1953 quarter, stock prices have continued the upsurge which has been going on with but minor interruption since last Fall. In this period yields have decreased despite higher average dividend payments. This is shown in the drop of about 17% in stock yields, based on one of the leading stock market averages, compared with a decline of 14% in the return afforded on prime quality corporate bonds.

The relationship between stock and bond yields, it will be noted, is practically the same now as it was last September, when stock prices reached their low point of the year.

Reflecting a combination of continued high income and of curtailed spending by individuals, personal savings in the first three months of this year amounted to 7.7% of the $249.1 billion of disposable income for the period. This compared with 6.9% in the early part of 1953 and with 4.3% in the adjustment period of 1947 through 1950.

Coming at a time when retail trade has been declining, the increase in savings evidences the unwillingness of individuals to buy. In this respect the trend of prices during the economic readjustment in evidence during the past year or so differs considerably from the experience of previous such periods. For instance, in the adjustment of 1948 and 1949 the index of wholesale prices dropped 8% and the consumer price index fell 3% during the initial months of the setback at that time. During the recent adjustment, on the other hand, industrial production went off by about 10% during the past nine months but, in sharp contrast, the index of wholesale prices remains at its peak level and the index of consumer prices has receded only one-half of 1% from the high point which it had reached during last Fall.

Going a step further, disposable income in the early months of 1954 increased 4% over early 1953, total personal expenditures were up only 2% and personal expenditures for all types of goods, as distinguished from services, were off by 3%.

On the basis of the latest available data, liquid savings of individuals, or their equity in liquid assets, less mortgages and consumer debt, has been expanding at an annual rate of about $10 billion.

In some economic quarters the large liquid savings in the hands of consumers are considered to present a challenge to industry, and proponents of this belief state unequivocally that both manufacturers and distributors might well devote more time and attention to the reasons which are impelling the American people to save more and spend less.

Conversely, to the writer's way of thinking, the utility company managements might endeavor to ascertain why more of the average individual's spare funds are not being invested directly in equity shares of the industry instead of being siphoned off as at present by institutions for the latters' eventual investment in senior securities of these same companies. With such knowledge in hand the utility managements then might be able to devise ways and means of attracting greater personal investment in their respective companies' shares.

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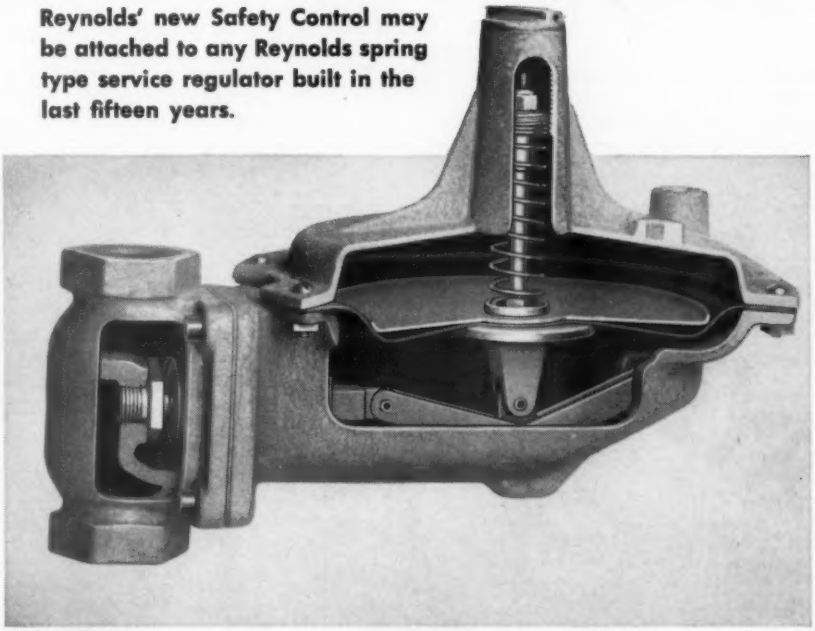

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Some New Economic Implications For the Natural Gas Industry

(Continued from page 15)

dominant position gas has attained in many markets is a guarantee for the future. American business history is crowded with the tragic record of other industries which made this mistake. Examples readily come to mind—the loss of passenger and LCL freight business by the railroads to the bus and trucking industry, the loss of the oil transportation business by the railroads, the sudden demise of the interurban electric transit business, the gradual death of the anthracite coal industry. All these came about because the value of the service offered did not measure up to the competition. To put it bluntly, we can price ourselves out of the market as easily as anyone else.

Responsibilities of 3 industry groups

It seems that there is a definite responsibility for each of the 3 segments of the industry—the producer, the pipeline company and the distributing company.

1. *The Producer*—In the final analysis, gas has realizable value only to the extent it is sold. In the ground, unused, it has no more value than the rocks comprising the structure in which it is contained. To the extent that field prices fairly reflect the cost of finding, extraction and a fair margin of profit, no one at the market-end of a pipeline can object.

Producers must realize that the seller's market for gas, which has existed since the end of World War II, is rapidly coming to an end. As a practical matter, marketing companies cannot pay unlimited prices for natural gas. When the price reaches an uneconomic point the marketing company must consider the alternatives of other methods of supply or revision of its planning to forego further load-growth.

Producers must recognize that it is better to obtain a profit of 2¢ on a billion Mcf than 10¢ on a million Mcf.

2. *The Pipeline Company*—The pipeline company must recognize that its financial health depends upon the financial strength of its marketing companies. Within the limits of a fair and reasonable price structure for natural gas, most marketing companies have a strong growth-potential. A dog-in-the-manger attitude on exclusive supply rights in a given market area, on the part of a pipeline, not only is conducive to poor customer relations, but it may reduce or delay the ultimate potential of the market.

In the anxiety to hold markets for exclusive development there has been a tendency by pipelines to make purchase commitments at prices which could be bettered by more effective planning. Because of favored nation clauses in existing purchase contracts, this has raised the overall cost of gas as well as the cost of the incremental gas.

Distributing companies are aware of the problems of a regulated business in a rising cost situation and are ready to pay prices which give effect to such costs. By the same token, distributing companies are unwilling to pay prices which are economically too high or which cannot be reasonably supported by facts. Pipelines must be fair and honest with their distributing companies if they expect the support of the marketing companies in rate increase proceedings.

Pipelines, too, should be willing to support industry efforts in research and promotion which, in the end, mean expanded markets for natural gas sales. We, in the marketing end of the business, often hear the pipeliner bemoan the niggardly return permissible under regulation. He talks wistfully of the profit opportunities available to the oil industry which operates in a free competitive market.

This position does not seem to be well founded. For example, the combined return on the equity investment of the 30 major oil companies, as determined by Fred Coqueron of the Chase Bank, was about 14% in 1952. The combined return on equity for 13 major pipeline companies in both 1952 and 1953 was about 13%. Certainly the risk factor between the 2 industries is sufficient to justify a wider spread in equity or common stock earnings than this. There does not seem to be any oil company with a major portion of its business supported by long-term contracts, especially contracts subject to escalation. The oil industry has no tribunal to appeal to when its return gets too low. It cannot, furthermore, take the chance of high proportions of debt capital which impart

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to pipeline stocks an unusual leverage advantage. The marketing companies do not begrudge the pipelines a high rate of equity return, but many of us feel the time has come for the pipeline companies to assume some of the burden of industry promotion and research which now falls almost entirely on the distributing company.

3. *The Distributing Company*—The distributing company must be prepared to absorb, to some extent at least, the rising cost of natural gas. This involves many things, including more effective gas load promotion, better load-growth planning, and tight control of costs. Old-line manufactured gas companies, recently converted to natural gas, must reorient themselves to accepting new levels of load development, even though this may require some forward buying through rate reductions.

These are not startling suggestions but merely common sense conclusions from a practical business point of view. For all of us in the industry, regardless of what segment we represent, the keynote should be to encourage and sustain the growth in sales volume. By so doing we increase the opportunity for profit and decrease the vulnerability to the normal hazards of business. This can be achieved if we all act together, with proper recognition that some give and take must be expected.

Adapted from a Presentation at Southern Gas Association Convention, 1954

Legal Considerations of Gas Company Employment Contracts

(Continued from page 27)

said controversial portion thereof, construed as herein above set forth, is valid and binding upon the parties."

Another point of law decided by this court was that the Carden-McReynolds Gas Co., also, must stop violating the restrictive clause. The counsel for the Carden-McReynolds company argued that, in any event, this corporation is not bound by any agreement signed by McReynolds while he was not an agent of the Corporation. The court refused to agree with this argument, and said:

"This contention cannot be fully sustained. McReynolds was one of the prime movers in the organization of said corporation, is its president, and is one of the principal stockholders. He is actively engaged in the business of said corporation, which is selling, at retail, Butane-Propane gas and appliances in connection with the use of such gas, which is the same kind of business in which complainant (Scott) is engaged, and through said corporation is in competition with complainant. Certainly one should not be permitted to do indirectly that which he cannot do directly."

Discharged employee wins damages

Modern courts consistently hold that an employment contract is valid and enforceable. Therefore, a gas company which breaches an employment contract is obligated to pay the employee the agreed monthly or weekly salary for the full balance of the term of employment.

In Goad v. Rogers, 229 Pac. (2d) 791, the testimony showed: One, Goad, was employed as manager for one year. Goad sued his employer alleging that the latter had breached the contract to employ him as manager for a period of one year at a weekly salary of $100.00 per week, plus 15% of the net proceeds to be derived from the operation of the business to be paid at the end of the one year's period. After Goad had acted as manager for only six weeks he was discharged. In holding the employer liable to Goad, the court said:

"The evidence is sufficient to support the court's finding that the employment agreement was for the definite period of one year, commencing August 1. We see nothing in the evidence which indicates that plaintiff (Goad) was not ready and willing to continue his services as manager for the balance of the year."

Therefore, the employer was compelled to pay Goad the full amount he lost. Because the court held that Goad was discharged without good reason.

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How Operating Equipment Is Cleaned Without Dismantling

(Continued from page 17)

practicalness of equipment used to handle the solvents.

A variety of cleaning techniques have been developed to meet different conditions encountered in various types of industrial equipment. These may be generally classified as follows: fill and soak, circulate, cascade, spray, jet and injection.

The fill and soak method usually is used when the equipment is of satisfactory structural strength to support the weight of the solvents, and the relationship of the liquid volume to the surface area to be cleaned is sufficient to provide enough solvent to effectively remove all of the deposits. In such an application, the solvent is left in the unit until the deposits have been removed, either by dissolution or disintegration. A typical example of this technique is represented in the diagrammatic hookup shown in Figure 1. Towers, regardless of the type of plate or packing, might use a hookup similar to this.

The circulation method is usually used on tube and shell units, ranging from extremely small heat exchangers to the largest size turbo-surface condensers. The customary hookup is shown in Figure 2. This method also is used on vertical tube and shell units. In this type of application, where the volume is small compared to the total surface to be cleaned, the solvent can be pumped through the unit and the spent solvent discharged to sewer, or returned to the truck and recirculated until spent. This method has considerable merit in removing deposits that are difficult to dissolve, but that are readily disintegrated by the solvent. In such cases, the mechanical action of the moving solvent materially aids in flushing out all of the disintegrated particles of the deposit. Limitations imposed here would be the volumes adequately handled by the chemical pump.

The cascading technique is generally used on towers where the equipment will not safely contain the weight of the solvent, or where the amount and solubility of the deposit will permit it. Here again the chemical action of the solvent is supplemented by the mechanical action of the flowing liquid, causing the deposits to disintegrate more rapidly.

The spraying technique is used on large units that cannot be completely filled because of structural limitations, or because the quantities of solvent required to completely fill them would be economically impractical. The application here is simply to wet the deposits with the solvents, and continue the wetting until dissolution has taken place. This method is frequently used on cooling coils, open box condensers, etc. Another important application for this method is in the cleaning of outside surfaces of storage tanks.

The high pressure jet technique, in which solvents are applied to deposits in a high velocity stream under pressures as high as 3,000 to 4,000 psi, is a comparatively recent development. It is used where deposits are not sufficiently soluble for removal by one of the other methods, or where deposits are so great it is uneconomical to attempt their removal by chemical dissolution alone. Here the chemical action of the solvent is supplemented by the mechanical scrubbing action of the jet stream impinging upon the deposit. Dust collectors, precipitators, large gas lines, tanks, lime-soda water-softening equipment have been cleaned in this manner.

The injection method also represents a comparatively new cleaning technique, making possible the cleaning of industrial equipment while it is in operation. This is applicable to certain water side deposits and is accomplished by introducing solvent into the inlet water stream, usually in very weak concentrations. This solvent is permitted to pass through the unit and is wasted with the discharge cooling water. In such cases, the flow of cooling water is reduced to a minimum for a predetermined period of time while introducing the solvents, in order to allow for a maximum contact time between the solvents and the deposits, as well as increasing the temperature of the solvent. Limiting factors are, of course, those imposed by process requirements.

Typical applications

The versatility of chemical cleaning can perhaps be best illustrated by citing a number of case histories.

Gas purifier towers were 13 x 88 feet in size, and contained wooden hurdles and separators. Hurdles were partially plugged with soft, tarry-looking deposits, high in sulfur contact. In cleaning this unit, the regular spray system was utilized, and 32,000 gallons of alkaline solution, heated to 160°F, was pumped through the system, followed by 7,500 gallons of acid. Two tons of material were removed. Subsequent inspection revealed the absorber section to be 100% clean, reactifying sections to be 80-90% clean.

Ammonia scrubbers were 14 x 40 feet in size. Wooden grids and 40 spray nozzles were an integral part of the equipment. Deposits were so heavy that the unit was practically inoperable. 12,000 gallons of acid introduced through the spray system removed approximately 240 cubic feet of scale. Overall pressure was 4 psi.

A 600 foot length of 30-inch gas line contained deposits which caused the pressure drop to increase until it had doubled the initial operating conditions. Deposits were found to be only slightly soluble. However, they consisted of friable, readily disintegratable material. Without purging the line, the alkaline solvent was jetted onto the deposits through a special nozzle at 2,500 psi. Following this treatment the pressure drop returned to normal.

A gas scrubber consisted of a vertical tank, having 4 tiers of tile. Mud-like deposits of calcium carbonate, iron oxides and iron sulfides had increased the pressure drop to 19 inches. With the scrubber in operation, 6,000 gallons of acid was pumped through the spray system. In less than 6 hours the pressure drop through the gas scrubber had decreased to 5 inches.

Cooling coils, consisting of 70 stacks of 2-inch pipe, 18 inches apart, were coated with ⅛ to ¼ inch of iron oxide; 500 gallons of acid solvent was applied to this deposit through special jet nozzles at 2,500 to 3,000 psi, with the coils in use and the cooling water on. As a result of this cleaning treatment the thermal efficiency of the cooling coils was raised from 60% to 86%.

These brief descriptions of typical cleaning operations illustrate the effectiveness of chemical solvent cleaning. Many types of equipment can be cleaned without dismantling.

Chemical cleaning is readily available, and is adaptable to changing field conditions and requirements. The successful use of chemical cleaning, however, requires a thorough knowledge of its principles and limitations.

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Needs for Firm Industrial Gas Service Under Specific Study

(Continued from page 20)

2. Interruptible rate consumers *should* receive a lower rate which would allow them a saving which would justify installing standby facilities.
3. Industries receiving gas on an interruptible rate basis should be educated as to all conditions of the service contract and should be *required,* as a prerequisite to receiving such service, to install and maintain a suitable standby system with adequate fuel storage.
4. Where industrial applications require a continuous supply of gas of uniform and unchanging composition, such customers should receive preferential service in the industrial service category and should pay a commensurate rate.

It is unfortunate that there are those who attempt to befuddle the issue in claiming that *all* industrial gas should be sold on a firm rate basis. Many of these men are not in the utility industry and are not considering the problems of the utility company that would be required to serve such firm loads, nor are they considering whether the utility could gain these industrial loads at a rate that would make it economically possible to serve such firm loads. Problems of the utility *must* be considered; some of the important considerations are:

1. Foremost in the list of industrial applications demanding firm-rate gas are those industries which supposedly cannot tolerate even the slightest change in the chemical composition of the gas.
2. Many utilities have a heating load that is 50% of their total sendout on maximum heating days. In many companies, the distribution systems are loaded to maximum capacity on those peak days.
3. The cost of meeting unrestricted firm-load demands would place the cost of the industrial gas well above the cost of other fuels that could be used and would lose the load to the utility.

It has been loosely stated, many times, that the utility should serve firm gas by installing adequate peak-shave equipment and dumping in peak-shave gas on maximum days in order to hold down the natural gas take from the transmission line. This is a very false and misleading attitude, because

1. In the industrial classifications listed as requiring exacting standards of chemical composition, it would make no difference whether it was the peak-shave gas dumped in by the utility or a standby plant supply of gas. The chemical change would have taken place and upset the industrial operation. From a casual observation, it would seem that it would be better if these firms had their own LP gas standby plants and switched over their equipment and adjusted to the LP gas during certain periods rather than trying to use the mixed gas supplied by the utility. In one large operation, the industrial gas customer installed an LP gas plant for year-around use because of the variation in even the regular supply of natural gas. The less critical loads were left on natural gas.
2. When the utility distribution system is taxed to its maximum capacity, it would not help the capacity of the system to dump in peak-shave gas. If such loads were possible, it would mean that on other days the system would operate at 50% of capacity, and this would not be economical operation for the utility.
3. But, for the sake of argument, we shall assume that the critical industrial applications could tolerate the changes in chemical composition of the natural gas caused by dumping peak-shave gas, and we shall assume that the utility expanded its system to meet 100% demand of all customers on the maximum day in the heating season. Then we would still be faced with the serious problems of: (a) the high cost of such a system and, (b) the terrific cost of peak-shave gas as compared with the commodity cost of the natural gas, or the bankrupting cost of uncontrolled peak load demand charges. Based on a $4.50 per Mcf demand and 30¢ commodity, the top 1 MMcf on a peak day that could be cut off would save the utility $54,300.00 over the next twelve months. The utility can't sell industrial gas on peak days when it costs that much.

If the utility attempts to meet unrestricted demands for firm industrial gas it would normally mean a very extensive expansion program for the distribution system and this would mean an increase in all gas rates. It is questionable if a regulatory body would grant such increases for all customers just to serve industrial gas on a firm, unrestricted basis.

The experience of the manufactured gas utilities has shown that the industrial loads that can be secured at rates necessary for a firm contract are very limited. Natural gas utilities are finding that in many sections of the country they have to sell industrial gas at 7¢ per therm, or less, or lose the load to LP gas and in many cases to other fuels. This would indicate the necessity for:

1. A firm industrial rate that is high enough to justify continuous service to some classes of industrial usage within certain limits which the gas utility can serve without unreasonable expansion of the gas facilities.
2. An interruptible rate service that is low enough to gain the larger industrial consumers needed to balance out the annual gas loads, and to allow such industrial consumer a sufficient saving to justify installing a suitable standby gas plant.

Many of the older natural gas utilities have such rates and have established these rates after years of experience. Those large areas being added to natural gas lines might well profit by this experience and go after the important industrial gas loads they can get with a suitably low interruptible gas rate. Delay in offering such rates after industry has waited so long for natural gas might well drive the load to other fuel.

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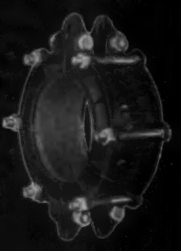

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GAS INDUSTRY CALENDAR

June

20-24 Canadian Gas Association, Banff Springs Hotel, Banff, Alberta, Canada.
21-22 AGA residential gas section, New York-New Jersey regional gas sales conference, Monmouth Hotel, Spring Lake, N. J.
27-29 Wisconsin Utilities Association, accounting section annual convention, Dell View Hotel, Lake Delton, Milwaukee, Wis.
28-29 Michigan Gas Association, Grand Hotel, Mackinac Island, Mich.

July

12-16 National housewares and home appliance exhibits, Auditorium, Atlantic City, N. J.
19-23 Western summer radio-television and appliance market, Western Merchandise Mart, San Francisco.

August

23-25 Appalachian gas measurement short course, West Virginia University, Morgantown, W. Va.

September

8-10 Pacific Coast Gas Association, Vancouver and Georgia Hotels, Vancouver, British Columbia.
8-10 Mid-West gas school and conference, Iowa State College, Ames, Iowa.
8-11 AGA operating section, organization meetings, Hotel New Yorker, New York.
10 New Jersey Gas Association, Hotel Monmouth, Spring Lake, N. J.
13-14 Independent Natural Gas Association of America, annual meeting, Roosevelt Hotel, New Orleans, La.
28-29 Texas Mid-Continent Oil and Gas Association, Baker Hotel, Dallas.

October

11-13 AGA annual convention, Atlantic City, N. J.
18-22 National Safety Council, Chicago.

November

1-5 National Metal Exposition, Chicago.
8-11 American Petroleum Institute, Conrad Hilton Hotel, Chicago.
8-12 National hotel exposition, Kingsbridge Armory, New York.
17-19 Wisconsin Utilities Association, gas and electric sections convention, Schroeder Hotel, Milwaukee, Wis.
28-December 3 The American Society of Mechanical Engineers, Statler Hotel, New York.

December

6-7 SGA advisory council and management conference, Point Clear, Ala.

January, 1955

13-20 National housewares & home appliance exhibits, Navy Pier, Chicago.

February, 1955

7-11 Western winter radio-television and appliance market, Western Merchandise Mart, San Francisco.

March, 1955

7-9 Mid-West Gas Association, St. Paul Hotel, St. Paul, Minn.
24-25 AGA gas supply, transmission and storage conference, Wm. Penn Hotel, Pittsburgh.

April, 1955

12-14 AGA sales conference on Industrial and commercial gas, Hotel Statler, Boston, Mass.
12-15 AGA distribution, motor vehicles and corrosion conference, Netherland Plaza, Cincinnati, O.
19-21 Southwestern gas measurement short course, University of Oklahoma, Norman, Okla.
25-27 Mid-West regional gas sales conference, Edgewater Beach Hotel, Chicago.

May, 1955

9-13 National restaurant exposition, Navy Pier, Chicago.
16-18 Southern Gas Association, New Orleans, La.
23-25 GAMA annual meeting, Ambassador Hotel, Los Angeles.

June, 1955

5-9 Canadian Gas Association, annual meeting, General Brock Hotel, Niagara Falls, Ontario, Canada.
9-10 Natural Gas and Petroleum Association of Canada, Royal Connaught Hotel, Hamilton, Ontario, Canada.
26-29 Michigan Gas Association, Grand Hotel, Mackinac Island, Mich.

July, 1955

18-22 Western summer radio-television and appliance market, Western Merchandise Mart, San Francisco.

PROFESSIONAL DIRECTORY

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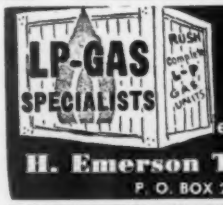

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